INTEGRATED PEST MANAGEMENT PLAN

FOR THE

CALIFORNIA ARMY NATIONAL GUARD

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Integrated Pest Management Plan for the California Army National Guard

Reviewed by:	Mr. Chris Wilde Pest Management Coordinator California National Guard	_____ Date _____
Reviewed by:	MAJ Kenneth Koop Compliance Branch Chief California National Guard	_____ Date _____
Reviewed by:	Mr. Douglas Bryceson Conservation Branch Chief California National Guard	_____ Date _____
Reviewed by:	LTC Kenneth Selover Director, Environmental Program California National Guard	_____ Date _____
Reviewed by:	CPT Mark Ouimet Facilities Maintenance Manager California National Guard	_____ Date _____
Reviewed by:	LTC Kevin Brown Director of Public Works/Base Engineers Camp Roberts	_____ Date _____
Reviewed by	MAJ Nicole Balliet Director of Public Works/Base Engineers Camp San Luis Obispo	_____ Date _____
Reviewed by:	2LT Robert Onyon Director of Public Works/Base Engineers Los Alamitos Joint Forces Training Base	_____ Date _____

Approved by:	LTC Curt Salveson	_____ Date _____
Reviewed at NGB Headquarters by:	CPT Alison Hyder Pest Management Consultant National Guard Bureau	_____ Date _____

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EXECUTIVE SUMMARY

1. The California Army National Guard (CAARNG) facilities are composed of Camp San Luis Obispo, Camp Roberts, Los Alamitos Armed Forces Reserve Center (AFRC), and armories and maintenance facilities scattered throughout the State. Camp San Luis Obispo is located in San Luis Obispo County near the city of the same name. Camp Roberts is located on each side of the boundary between Monterey and San Luis Obispo Counties. Los Alamitos AFRC is located in Orange County in the greater Los Angeles area. Other Army National Guard facilities within the State consist of small land parcels with relatively few buildings.

2. The contents of this plan apply to all activities and individuals working, residing or otherwise doing business for the CAARNG, and will be implemented to the maximum extent possible. At no time will pest management operations be done in a manner that will cause harm to personnel or the environment. Pest management responsibility will begin with those individuals that occupy or maintain buildings or open spaces on the installation. Nonchemical control efforts will be used to the maximum extent possible before pesticides are used. This plan will be a working document and will be continually updated to reflect actual pest management practices.

3. The Pest Management Plan for the CAARNG describes the pest management requirements, outlines the resources necessary for surveillance and control, and describes the administrative, safety and environmental requirements of the program. The program utilizes State certified Pesticide Applicators and other manpower (contractors, local city or county personnel, or armory personnel) as necessary to control pests. Pests included in the plan are: weeds and other unwanted vegetation; mosquitoes; vertebrate pests such as birds, mice, rats, and snakes; flying insects; crawling insects; spiders; and other pests. These pests can interfere with the military mission, damage real property and the environment, increase maintenance costs and expose personnel to diseases unless properly controlled. Actual pest management procedures are found in the Integrated Pest Management Outlines included as Appendix A.

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A. BACKGROUND

1. Purpose

This pest management plan is a framework through which pest management is defined and accomplished by the California Army National Guard (CAARNG). The plan identifies elements of the program to include health and environmental safety, pest identification, and pest management, as well as pesticide storage, transportation, use and disposal. This plan is to be used as a tool to reduce reliance on pesticides, to enhance environmental protection, and to maximize the use of integrated pest management techniques.

2. Authority

a. Department of Defense (DoD) Instruction 4150.7, DoD Pest Management Program, 22 April 1996.

b. Army Regulation (AR) 200-5, Pest Management.

c. DoD Pest Management Measure of Merit #1 (see Appendix M).

d. Integrated Pest Management policy letters from the National Guard Bureau, Natural Resources Program Manager, Dr. Marc Imlay.

3. Program Objective

This plan provides guidance for operating and maintaining an effective pest management program. Principles of integrated pest management (IPM) are stressed in the plan. IPM consists of the judicious use of both chemical and nonchemical control techniques to achieve effective pest management with minimal environmental contamination. Adherence to the plan will ensure effective, economical and environmentally acceptable pest management and will maintain compliance with pertinent laws and regulations.

B. RESPONSIBILITIES

1. Chief of Staff, Army

a. Designate a Pest Management Coordinator for all pest management activities.

b. Approve and support the pest management plan.

c. Ensure that CAARNG personnel performing pest control receive adequate training, and achieve pest management certification (if required).

d. Ensure that all pest management operations are conducted safely and have minimal impact on the environment.

2. Area Coordinators (OMS and Armories)/Camp and AFRC Commanders.

a. Determine the pest management requirements for the CAARNG facilities.

b. Request and monitor contract pest control operations.

c. Maintain adequate records of pest management operations.

d. Ensure that CAARNG personnel performing pest control receive adequate training, and achieve pest management certification (if required).

3. Armory and Other Facility Managers.

See Appendix B, Armory/Facility Manager's Checklist.

a. Assure that all contracted pest management activities are recorded in accordance with this plan. See Appendix C, Pest Management Records, for an example of the Pest Management Maintenance Record (DD Form 1532-1).

b. Apply good sanitary practices to prevent pest infestations.

c. Use all nonchemical pest control techniques as recommended in the IPM outlines (Appendix A) before requesting further assistance from the CAARNG Facility Management Office (e.g., contracted pest control).

d. Apply only those pesticides that are approved for self-help use and are recommended in the IPM outlines (Appendix A). See Appendix D for a list of authorized self-help pest control items.

e. Cooperate fully with pest management contractors in scheduling pest management operations, to include preparing the areas to be treated.

4. Building Occupants

a. Apply good sanitary practices to prevent pest infestations.

b. Apply only those pesticides approved for use by Facility Managers.

c. Cooperate fully with contractors and camp/armory/facility personnel in scheduling pest management operations, to include preparing the areas to be treated.

d. Use all nonchemical and chemical pest control techniques available through the self-help program to the fullest extent before requesting further assistance from the Facility Management Office.

5. Pest Management Coordinator

See Appendix E, Pest Management Coordinator's Checklist.

a. Prepare and monitor the pest management plan.

b. Annually update the plan.

c. Coordinate with activities conducting pest surveillance or control to ensure all applicable information is recorded and reported as required by this plan.

d. Function as a point of contact between those individuals who store and apply pesticides (e.g., facility management, pest control contractors) and activities or individuals who document or deal with pesticide use in their programs (e.g., Environmental Office, Safety Office, Fire Department).

e. Oversee the technical aspects of the self-help program with respect to pest control items and training of facility managers. Monitor the distribution of self-help pesticides at CAARNG sites.

f. Monitor certification and continuing pest management training for pesticide applicators at CAARNG facilities.

g. Coordinate and monitor contracts dealing with pesticide application and keep a copy of each contract on file. Obtain review and approval of contracts and pesticide use submittals in accordance with DoD and National Guard Bureau policy and directives.

h. Coordinate with local, State and Federal agencies, as necessary, to conduct the CAARNG pest management program. See Appendix F, Coordination, and Appendix G, CAARNG Points of Contact and Resources Available to Support the CAARNG Pest Management Program.

i. Provide answers to questions concerning pest management from Commanders, the National Guard Bureau, Department of the Army (DA), and interested State Agencies.

j. Perform design review of new construction projects to ensure that pest entry points and potential harborage have been eliminated and that proper preconstruction termite treatment is included in project specifications.

6. Camp/AFRC/Area Coordinator Pest Management Personnel

a. Use integrated pest management techniques to the maximum extent possible.

b. Must be State certified to apply pesticides in all categories of pest control required on the installation.

c. Control pests according to the provisions of this plan, and in accordance with DoD and Army regulations (DoDI 4150.7 and AR 200-5).

d. Operate in a manner that minimizes risk of contamination to the environment and personnel.

e. Maintain written records of pest surveillance and control efforts. See Appendix C, Pest Management Records, for the type of information required.

7. Contracted Pest Management Personnel.

a. Use integrated pest management techniques to the maximum extent possible.

b. Must be State certified to apply pesticides in all categories of pest control as outlined in the contract.

c. Control pests according to the provisions of this plan, and in accordance with DoD and Army regulations (DoDI 4150.7 and AR 200-5).

d. Operate in a manner that minimizes risk of contamination to the environment and personnel.

e. Provide written records of pest surveillance and control efforts to the Armory/Facility Manager. See Appendix C, Pest Management Records, for the type of information required.

8. Agricultural Lessees.

a. Use integrated pest management techniques to the maximum extent possible.

b. Operate in a manner that minimizes risk of contamination to the environment and personnel.

c. Apply only those pesticides approved for use on the Camp/AFRC.

d. Report pesticide use to the CAARNG Pest Management Coordinator. See Appendix C, Pest Management Records, for the type of information required.

9. State Surgeon.

a. Coordinate with local health officials to determine the prevalence of disease vectors and other public health pests in the area surrounding each facility.

b. Conduct surveillance for mosquitoes, ticks, cockroaches, or other pests that could adversely affect the health and welfare of installation personnel.

c. Evaluate the health aspects of the pest management program.

d. Maintain liaison with the State Department of Health, local mosquito control districts, and the U.S. Army Center for Health Promotion and Preventive Medicine, Direct Support Activity-West (located at Fort Lewis, Washington)

10. Unit Commanders.

a. Assure the proper use of the DoD repellent system and other personal protective measures while troops are exposed to potential disease vectors. (See DoD Arthropod Repellent System).

b. Appoint a field sanitation team for each company, troop, or battery size unit. Assure field

sanitation teams are trained and supplied and mission capable prior to deployment (FM 21-10-1).

C. GENERAL.

1. Installations and Facilities.

a. Camp San Luis Obispo.

(1) Camp San Luis Obispo is located on the California Central Coast, approximately midway between Los Angeles and San Francisco on Highway 1, five miles west of the City of San Luis Obispo and seven miles east of Moro Bay. The installation consists of 4,160 acres at an average elevation of 300 feet above sea level with the extreme elevation rising just over 2,000 feet. The terrain is predominantly hilly, mostly covered with range grass. Trees and brush cover the high areas to the north. The average rainfall is 24 inches a year with the peak in the winter months and no appreciable precipitation occurring from May through September.

(2) Camp San Luis Obispo, the original home of the California National Guard, was established in 1920 by the State of California. Known originally as Camp Merriam, it has been leased to the Federal Government and then returned to State control a number of times. The primary function of the Camp is to provide both field and garrison facilities for the training of reserve components. In addition, the Camp provides operational, training, and logistical support to a wide variety of civilian and military agencies at the federal, state and local levels. These agencies include the California Army and Air National Guard, the U.S. Army Reserve, the U.S. Coast Guard, the California Conservation Corps, the California Specialized Training Institute, Cuesta Community College, and CALTRANS.

b. Camp Roberts.

(1) Camp Roberts lies within both Monterey and San Luis Obispo Counties. The installation covers 42,362 acres. Cantonment areas occupy approximately 1400 acres. Camp Roberts is owned by the U.S. Army and is licensed to and operated by the California National Guard. Army Reserve, National Guard, and Active units train on the installation.

(2) The San Antonio River runs along the northwestern border of the Camp, and the Nacimiento and Salinas Rivers run through the installation. These rivers support both game and non-game fish. The dominant vegetation types are grassland, valley oak grassland (which includes riparian habitat characterized by cottonwood, willow, sycamore, and box elder) and the blue oak grassland found on more sloping topography. A limited amount of mixed chaparral habitat occurs on drier, elevated slopes.

(3) There are two agricultural outlease operations on Camp Roberts. Sheep are grazed on 22,100 acres on the Main Garrison, and 5,854 acres on the East Garrison are used for cattle grazing. Lessees do not conduct pest control operations.

c. Los Alamitos AFRC**.**

(1) The AFRC consists of approximately 1300 acres located within the greater Los Angeles metropolitan area. The installation is located in the City of Los Alamitos in northern Orange County near the junction of the 405 and 605 freeways.

(2) The mission of the AFRC is to provide the Adjutant General of the State with the necessary personnel and equipment to provide training, administrative and logistical site support to tenant and training units, and to provide for year-round maintenance and operation of the post.

(3) The AFRC is the key location for State and Federal Government response in the event of a major civil disaster in the Los Angeles/Orange County area. It's designation as a Disaster Support Area was predicated on an anticipated earthquake with a magnitude of 8.0 occurring along the San Andreas Fault that cuts through the Southern California area.

(4) The mission of the Los Alamitos Army Airfield is to provide Base Operations support for tenant and transient DoD and Allied aircrews. Airfield service support, air traffic control, and weather service are also provided.

(5) There is one agricultural outlease operation on the AFRC. Approximately 125 acres are used for fruit and vegetable production. The lessee conducts pest control on the leased land related to the crops planted. A Government housing area and a golf course are located within the boundary of the ARRC. These activities are operated and maintained exclusively by the U.S. Navy.

2. Plan Maintenance.

a. The CAARNG Pest management Coordinator maintains this pest management plan. Pen and ink changes are made to the plan as needed. The plan is reviewed and updated annually to reflect all changes made in the pest management program during the fiscal year. References, methods and materials will be updated and the most effective management of all pests will be included. Any changes in pest management requirements will be incorporated into the plan during annual revisions.

b. Plan review and approval are conducted in accordance with DoD and National Guard policies and directives. Annual updates of this plan are sent to the National Guard Bureau Pest Management Consultant not later than 30 October.

D. PRIORITY OF PEST MANAGEMENT

Priorities of pest control operations are in the order shown below. This listing signifies the importance of certain pests that affect the health of CAARNG personnel; destroy food and other commodities, and damage buildings, structures and other real property. This section does not list pests in the order in which they are commonly found on CAARNG facilities. Weeds and other unwanted vegetation, mice, common household insects, and wasps make up the bulk of the pest management workload.

1. Disease Vectors and Public Health Pests

a. Mosquito species found in the State have the potential to transmit Western equine encephalitis and West Nile Virus. While mosquitoes are not a significant problem around CAARNG facilities, efforts are undertaken to reduce and minimize mosquito-breeding areas.

b. Ticks may transmit disease organisms within the State. Tick-borne diseases include: Lyme disease and Rocky Mountain spotted fever. Personnel conducting outdoor activities will minimize tick exposure by wearing appropriate clothing, applying tick repellent, and performing personal hygiene inspections (with bathing) daily (see DoD Arthropod Repellent System).

c. Fleas can transmit plague and are found on numerous rodents throughout the State. Plague epizootics in California Ground Squirrels have occurred on a regular basis on Fort Hunter Liggett, an active Army installation just north of Camp Roberts. See Appendix H for the Camp Roberts Plague Contingency Plan and a copy of the California Plague Report, 1998.

d. Black widow spiders may produce painful bites as well as toxic reactions. Bees and wasps may produce allergic reactions in some individuals.

e. Skunks, foxes and bats may be infected with rabies. Since these animals may be found in or under CAARNG buildings, the disease potential should be recognized.

f. Mice occasionally invade buildings and cause damage to food and other products. In addition, mice present a potential human health threat of Hantavirus pulmonary syndrome (HPS). This disease results from the inhalation of the aerosolized virus found in the feces and urine of rodents, particularly deer mice (*Peromyscus maniculatus).* Although this disease is relatively rare, the high fatality rate (~50 percent) makes it important. Human cases of Hantavirus have been found in California. Personnel who handle mice and other small mammals should refer to the Centers for Disease and Control website on Hantavirus at: http://www.cdc.gov/ncidod/diseases/hanta/hps/noframes/generalinfoindex.htm. Additional information can be obtained by calling the U.S. Army Center for Health Promotion and Preventive Medicine-West (see Appendix G for phone numbers).

2. Quarantine and Regulated Pests.

a. The Pest Management Coordinator coordinates with the local USDA inspector to determine requirements regarding inspection of cargo for the presence of eggs, larvae, or adult insects that the USDA has prohibited from entering certain geographic areas.

b. Any retrograde cargo that is received will be inspected inside the common carrier (e.g., truck, aircraft) used for transport. If any signs of live pests or plant/soil material are present, then the shipping container will be sealed and impounded to prevent discharge of the contents. The local USDA inspector will be notified, and further disposition of the materiel will be made following a joint inspection. If any quarantine pest is suspected, the Facility Manager will notify the Pest Management Coordinator.

3. Stored Food Product Pests

Food items located in dining facilities, in armory kitchens or in food storage facilities may become infested by stored food product pests.

4. Pests of Real Property.

a. Birds roost in warehouses, aircraft hangars, maintenance and other buildings and damage equipment and supplies with their droppings.

b. Gophers and moles damage lawns and other grassy areas through their burrowing.

c. Termites are found in California. Due to the high cost of repairing termite damage, structures built with wood construction materials should be periodically inspected for termites or termite damage.

5. Noxious and Invasive Plants

Invasive plants are introduced species that have few, if any, natural controls in the United States and spread out of control. Noxious weeds found on Camp San Luis Obispo include the giant reed, *Arundo donax*, an exotic plant that has become an obstacle in native habitat restoration work. Russian thistle is found on the ranges at Camp Roberts, but is controlled by mowing. The CAARNG supports the three goals of the National Strategy for Invasive Plant Management. These are prevention, control, and restoration. Agricultural lessees are required to control noxious weeds on their leased land.

6. Other Undesirable Vegetation

Weeds along fence lines, on road shoulders, paved surfaces (including runways), etc. require control using appropriate herbicides. Some control of unwanted plants is done mechanically by mowing and weedeaters.

7. Ornamental Plant and Turf Pests

Various insect pests, resulting in damage to or destruction of the plants, can infest trees, shrubs, and lawns.

8. Animal Pests.

a. Mice occasionally invade buildings. The primary management techniques for controlling these rodents are exclusion and sanitation. Snap traps are the main method used for controlling rodent infestations indoors.

b. Stray dogs and cats occasionally need to be captured at CAARNG sites. Stray animal control at Camps San Luis Obispo, Camp Roberts, and Los Alamitos AFRC is accomplished by the Security Police. Stray animal control at other sites (i.e. armories) is coordinated and performed by local municipal animal control authorities.

c. Gophers damage lawns and other turf areas through their burrowing.

d. Control efforts for regulated wildlife species such as raccoons and skunks will be coordinated with the U.S. Department of Agriculture (USDA), Animal, Plant, Health Inspection Service (APHIS), Wildlife Services and the California Department of Natural Resources.

9. Household and Nuisance Pests

Crawling insects (e.g., ants, cockroaches) and spiders may require control in office, billeting, food service facilities, warehouses and other administrative buildings. Proper sanitation and housekeeping will do much to discourage these pests.

E. INTEGRATED PEST MANAGEMENT (IPM)

Integrated pest management is the judicious use of both nonchemical and chemical control to suppress or prevent pests from exceeding an acceptable population or damage threshold. Emphasis is placed on minimizing environmental disruption. Integrated pest management strategies depend on surveillance to establish the need for control and to monitor the effectiveness of management efforts.

1. IPM Principles

The four basic principles described below are the heart of IPM, and are descriptive of the philosophy used to manage pests on the CAARNG facilities; specific IPM measures can be found in the IPM Outlines in Appendix A. While any one of these methods may solve a pest problem, often several methods are used concurrently, particularly if long-term control is needed. For additional IPM NGB policy guidance refer to Memorandum, NGB-ILE, 21 January 1997, subject Integrated Pest Management (see attached file *All States Log Number P97-0027.pdf*).

a. Mechanical and Physical Control. This type of control alters the environment in which a pest lives, traps and removes pests where they are not wanted, or excludes pests. Examples of this type control include: harborage elimination through caulking or filling voids, screening, mechanical traps or glue boards, and nets and other barriers to prevent entry into buildings. Mechanical and physical controls are the primary means for pest control whenever possible.

b. Cultural Control. Strategies in this method involve manipulating environmental

conditions to suppress or eliminate pests. For example, spreading manure from stables onto fields to dry prevents fly breeding. Elimination of food and water for pests through good sanitary practices may prevent pest populations from becoming established or from increasing beyond a certain size.

c. Biological Control. In this control strategy, predators, parasites or disease organisms are used to control pest populations. Sterile flies may be released to lower reproductivity. Viruses and bacteria may be used which control growth or otherwise kill insects. Parasitic wasps may be introduced to kill eggs, larvae or other life stages. Biological control may be effective in and of itself, but is often used in conjunction with other types of control. Currently, biological control techniques are seldom employed on CAARNG facilities. However, with the increasing success of novel biological weed control technologies, these control techniques will become a more feasible component of the CAARNG IPM program.

d. Chemical Control. Pesticides kill living organisms, whether they are plants or animals. At one time, chemicals were considered the most effective control available, but pest resistance rendered many pesticides ineffective. In recent years, the trend has been to use pesticides that have limited residual action. While this has reduced human exposure and lessened environmental impact, the cost of chemical control has risen due to requirements for more frequent application. Since personal protection and special handling and storage requirements are necessary with the use of chemicals, the overall cost of using chemicals as a sole means of control can be quite costly when compared with nonchemical control methods. Whenever possible, chemical control will be considered the last option when performing control operations.

2. IPM Outlines

IPM Outlines for pest surveillance and control are found in Appendix A. Each major pest or category of similar pests is addressed, by site, in separate outlines. New outlines will be added to Appendix A if additional pests at specific sites are encountered that require surveillance or control operations. Added outlines will be sent to the NGB Pest Management Consultant for review. CAUTION: These outlines do not identify all the precautions and directions identified on pesticide product labels. Pesticide applicators are responsible for being familiar with and following all precautions and directions on the pesticide label of the pesticide being used.

F. HEALTH AND SAFETY.

1. Medical Surveillance of Pest Management Personnel

Contractors generally perform Pest control; however, Facilities Engineering Area personnel perform some pesticide application. Currently, there is no medical surveillance program for those CAARNG personnel who apply pesticides. In addition, there is no respiratory protection program for pesticide applicators. Efforts are underway to find a remedy for this problem. Some CAARNG personnel only apply those pesticides listed for self-help pest management and do not require medical surveillance. Advice on medical surveillance for pesticide applicators can be obtained from the CAARNG Occupational Health Section. It is not anticipated that federal employees or M-Day soldiers will be authorized to perform pest management activities requiring medical surveillance.

2. Hazard Communication

Material Safety Data Sheets (MSDS) for pesticides stored on Camp Roberts are kept by the installation Environmental Office. MSDS for pesticides used by armory/facility maintenance personnel are made available to all individuals who would have contact with these chemicals. Additionally, potential hazards associated with the pesticides are included in hazard communication training for CAARNG site employees. "Pesticide Safety Information Series N", produced by the California Environmental Protection Agency, are excellent sources of pesticide information for use by the CAARNG Pest Management Coordinator and by employees applying pesticides. MSDS are also available at the Facilities Engineering Area Headquarters for those pesticides used by Area maintenance personnel.

3. Fire Protection

The usual hazards presented by a fire are compounded in the case of a pesticide fire by the danger of pesticide poisoning and contamination. The Pest Management Coordinator will ensure that pre-fire coordination is made with appropriate fire department and other emergency officials to address pesticides stored in CAARNG buildings. Additional information regarding pesticides and fires can be found in Armed Forces Pest Management Board (AFPMB) Technical Information Guide (TG) No. 16, Pesticide Fires: Prevention, Control, and Cleanup, June 1981.

G. ENVIRONMENTAL CONSIDERATIONS.

1. Protection of the Public

Adequate precautions shall be taken during pesticide application to protect the public, on and off CAARNG facilities. Pesticides are not applied outdoors when the wind speed exceeds five miles per hour. Whenever pesticides are applied outdoors, care is taken to make sure that any spray drift is kept away from individuals, including the applicator. Individuals wearing the proper personal protective clothing and equipment indoors accomplish pesticide application. Personnel are only permitted in a treatment area as dictated on the label of the pesticide product being used.

2. Sensitive Areas

Special consideration must be given prior to conducting pest control operations in sensitive areas that are identified on pesticide labels. No pesticides are applied directly to wetlands or water areas (lakes, rivers, etc.) unless its use is specifically approved on the label. In addition to aquatic and marine habitats, sensitive areas also include critical habitat to endangered, threatened, or rare flora or fauna species, and unique geological and other natural features.

3. Endangered, Threatened, and Protected Species.

a. Protected migratory birds that occur on CAARNG property cannot be controlled without a permit. The Pest Management Coordinator will periodically evaluate ongoing pest control operations and will evaluate all new pest management operations to ensure compliance with the Endangered Species Act and Migratory Bird Treaty Act

b. No pest management operations are conducted that are likely to have a negative impact on endangered or protected species or their habitats without prior approval from the National Guard Bureau Pest Management Consultant. Special consideration is taken when using pest management tactics in areas where endangered species are found. Refer to the Integrated Natural Resources Plan

for special environmental concerns pertaining to endangered species. A list of endangered species of concern to the CAARNG can be found at http://www.dfg.ca.gov/hcpb/species/t_e_spp/tespp.shtml.

4. Environmental Documentation.

a. An environmental assessment (EA) for State National Guard pest management programs has been prepared by the National Guard Bureau. A copy of the Findings of No Significant Impact (FONSI) can be found attached as *NGB FNSI 9-04.pdf*. This plan should also be referenced as documentation of pesticide use.

b. Pests and pesticides have the potential to cause harm to the environment. The CAARNG is committed to supporting pest management within the command. The establishment of this pest management plan is part of that commitment. Spill contingency plans are maintained at each camp/armory/facility with a copy maintained at the CAARNG Environmental Division. Pesticides used on property belonging to the CAARNG are treated as hazardous materials in these plans.

5. Pesticide Spills and Remediation

An adequate pesticide spill cleanup kit will be maintained wherever pesticides are stored or used. Information on pesticide spills can be found in AFPMB TG 15, Pesticide Spill Prevention Management, June 1992. All pesticide spills are reported to the CAARNG hazardous waste manager. Training site engineers are the first responders for hazardous materials spills, including pesticides. Each armory or maintenance shop has its own spill team.

6. Pollution Control/Abatement Projects

One pollution control project is in progress that involves pesticides. An old pest control building is scheduled to be demolished within the year. Environmental testing and evaluation has already be completed.

7. Pollution Prevention (P2)

The pest management program, as outlined in this plan complies, whenever possible, to Executive Order 12856 of August 3, 1993, Federal Compliance With Right-to-Know Laws and Pollution Prevention Requirements. The control of pests with pesticides is considered only after nonchemical control methods have been exhausted. Integrated pest management strategies that stress nonchemical control form the basic framework of the pest management program. In accordance with the revised Pest Management Measures of Merit (Appendix M) initiatives, pesticide usage will be maintained at the level consisting of an average of the FY 93 and FY 94 levels. For the CAARNG, this level is 5,263 pounds per year. Methods to be used to maintain this goal are included in Appendix A.

8. Prohibited Activities

a. At no time will a pesticide be used in any manner that is inconsistent with its label.

b. Pesticide products that have been canceled by the State of California or the US EPA will not be used as part of the CAARNG pest management program.

H. ADMINISTRATION.

1. Operations

Pest management operations will be conducted in accordance with Appendices A [Integrated Pest Management (IPM) Outlines] and I (Pest Management Operations) of this plan.

2. Work Orders

Work orders for pest control can be issued in response to complaints from building occupants. Complaints are referred to local facility maintenance personnel. If the pest problem cannot be solved by nonchemical methods or the use of self-help materials, then a request for contracted pest control is sent to the Pest Management Coordinator.

3. Contracts

a. Contracts are used when camp/armory/facility personnel do not perform essential pest management activities. Pest problems threatening the health, safety or welfare of installation personnel are given priority. Contracts are administered in accordance with AR 200-5 and with CAARNG contracting procedures. Facility Managers will contact the Pest Management Coordinator for guidance. Forward pest control contracts, which have not been included in the installation pest management plan or are inconsistent with the approved pest management plan, to the Pest Management Consultant (CPT. Alison Hyder) at the National Guard Bureau for review. Copies of contract specifications for pest control at CAARNG camps/ armories/facilities can be found in Appendix J.

b. In accordance with Executive Order (EO) 12856 and Secretary of Defense Memorandum, Subject: *Comprehensive Pollution Prevention Strategy*, 11 August 1994, pest management contracts are initiated on an "as needed" basis. Monthly or periodic spraying will be eliminated unless deemed necessary after surveying and monitoring pest population levels. The EO states that the military will decrease its usage of toxic chemicals and pollutants by 50 percent. Use of integrated pest management techniques will be encouraged in all contracts. Pest problems threatening the health, safety, or welfare of installation personnel shall receive priority.

c. Once a contract is awarded, it is the responsibility of facility personnel to establish a date and time for work to commence. Ongoing contracts shall be evaluated annually or as necessary. Prior to any payment being made, an evaluation to confirm the satisfactory completion of all work shall be performed.

d. Contractors who conduct pest control on CAARNG facilities must:

(1) Show proof of liability insurance.

(2) Have State commercial certification and licensing in the category or categories of work to be performed.

(3) Use only EPA and State registered pesticides.

(4) Furnish CAARNG personnel with legible copies of specimen labels and the MSDS of all pesticides proposed for use.

(5) Furnish CAARNG personnel with information required for pest management record keeping. Facility personnel will record pest management operations on the Pest Management Maintenance Record (DD Form 1532-1) for the building or site where the work was performed. Appendix J contains a pesticide application information sheet that can be provided to the contractors before or during application.

e. A copy of each contract dealing with pest control will be forwarded to the CAARNG Pest Management Coordinator.

4. Agricultural Outleases

Government land is leased for cattle grazing at Camps Roberts and San Luis Obispo. Camp Roberts also has a sheep lease. Since these leases do not involve crop production, there is little likelihood that the lessees will apply pesticides. Los Alamitos AFRC has an agricultural outlease used for crop production of strawberries. In the past, the Los Alamitos lessee has applied pesticides. Whenever pesticide application is performed, all lessees conducting pest management operations or the contractors they hire to provide pest management services will adhere to the following:

a. Use only EPA and State registered pesticides.

b. Application of pesticides will be in accordance with label directions.

c. The applicator must comply with all Federal, State, and local regulations.

d. Pesticides must be mixed, stored, and disposed of in accordance with Federal, State, and local regulations, and with procedures established by the CAARNG.

e. The lessee or contractor will bring all pesticides and application equipment onto the installation each day services are provided. No pesticides or pesticide application equipment will be stored or maintained on the installation.

f. Furnish CAARNG personnel with information required for pest management record keeping.

5. Interservice Support Agreements

The CAARNG has no Interservice Service Support Agreements (ISSA).

6. Resources

a. Maintenance of CAARNG camps, armories and facilities (including the pest management program) is supported with State and/or Federal funds.

b. The staff required to maintain an effective pest control program is approximately ½-manyear at Camp Roberts, Camp San Luis Obispo, and Los Alamitos AFRC and less than 1/4 man-year at any given armory or other facility.

c. There are no pesticides stored at the armories. All pesticide applications are done by contract and the contractors are not allowed to store any pesticides on the armory grounds.

d. Pesticides are stored on Camp Roberts in Buildings 6457A and B, located behind the Motor Pool #2. This facility consists of two hazardous materials containers that meet federal and Army standards. A spill kit is available at the site.

e. All pesticides are locked up when not in use, and stored in locations where food, clothing and other personal items are not accidentally contaminated.

7. Reports and Records

a. The Pest Management Coordinator is responsible for the overall maintenance of all in-house and contracted pest management operations (e.g., pesticide use, surveillance). Individual records of pesticide use will be kept at each camp/armory/facility.

b. Adequate records of all pest management operations performed by maintenance personnel, contractors, and self-help are maintained by camp/armory/facility maintenance personnel.

c. Pest surveillance and control operations will be recorded on the Pest Management Maintenance Record (DD Form 1532-1). A copy of this record card will be maintained for each building requiring pest management services and will become a permanent record of pest management activities. See Appendix C for an example of a Pest Management Maintenance Record. If it is found that DD Form 1532-1 does not meet the requirements for record keeping dictated by the State of California, a State-generated or locally reproduced form, which serves the same purpose, may be used.

d. Records of pesticides used at CAARNG facilities will be compiled at the end of each fiscal year for compliance with the DoD Measures of Merit (see Appendix M). All pesticides used must be reported in pounds of active ingredient -- the exception to this rule is for those products found in the self-help program. In this latter case, simply report the number of devices (e.g., bait stations, aerosol containers) used. In order to calculate the amount of pesticides being applied by contractors, certain information should be obtained from the contractor. The type of information needed, as well as other information needed to fill out the DD Form 1532-1, can be found in Appendix C. The facility manager should request this information from the contractor whenever pesticides are commercially applied in their facilities.

8. Training and Certification

a. Any CAARNG personnel who use self-help pest control items that are formulated as ready-to-use products and are classified as general use, or are pest management materials that consist of nonchemical devices such as mouse traps or insect sticky traps, are not required to be certified. DoD or the State of California, as appropriate, must certify individuals who apply pesticides other than those authorized for self-help. All contractors must be certified by the State of California in order to apply pesticides at CAARNG facilities. Copies of training certificates for the Facilities Engineering Area pesticide applicators are maintained at each Area headquarters.

b. The CAARNG Pest Management Coordinator will receive training in the elements of the DoD pest management program pertinent to the CAARNG. HAZCOM training is also appropriate since exposure to pesticides may occur in the course of the job. The CAARNG Pest Management Coordinator completed the DA Pest Management Coordinator/Quality Assurance Evaluator Course in 1998.

c. Camp/Armory/Facility Managers must be familiar with their quality assurance responsibilities and with the requirements outlined in this plan. Ideally, Camp/Armory/Facility Managers receive basic pest management training (coordinated by the Pest Management Coordinator) from DoD, State, or local personnel in order to enhance their ability to conduct surveillance and manage the pest management program on their facilities. All Facility Managers should review the Army's videotape presentation on "Self-Help Pest Management."

d. At facilities where self-help pest control items are used, individuals will be trained in the safe, efficient and environmentally sound use of pesticides and other integrated pest management techniques by certified pest control personnel.

9. Quality Assurance/Quality Control

The Pest Management Coordinator is responsible for implementing this plan and for assuring the quality of all pest management activities through the Camp/Armory/Facility Managers. Work performed by contracted pest management personnel will be evaluated based on the adherence to: 1) the contract scope of work statement negotiated through the CAARNG Facilities Management Office and/or the Camp/Armory/ Facility Managers, 2) the requirements outlined in this plan, and 3) the pest management operational procedures found in Appendix N. The Camp/Armory/Facility Manager will review contracted pest control work to determine the effectiveness of control efforts. Failure of a contractor to adequately control pests will be reported to the Facilities Management Office.

10. Design/Review of New Construction

Construction projects on CAARNG sites are reviewed with pest prevention and control in mind. The Pest Management Coordinator and Facilities Engineering personnel will review the design of new buildings or other structures and conduct a pest evaluation in the constructed facility prior to completion of the project to ensure that pest entry points and potential harborage have been eliminated. USACHPPM-West personnel on request provide assistance.

I. COORDINATION - DoD, Other Federal, State, and Local

1. The NGB Pest Management Consultant will review the pest management plan, and will give special attention to any pesticide application that uses restricted use pesticides, uses any pesticide that may significantly contaminate surface or ground water, include 259 or more hectares (640 acres) in one pesticide application, may adversely affect endangered or other protected species or habitats, or involves aerial application of pesticides.

2. Liaison will be maintained between the Pest Management Coordinator and Camp Environmental personnel and local County and State health agencies to determine the prevalence of disease vectors

and other public health pests in the area surrounding the camp/armory/facility.

3. County health and environmental personnel are coordinated with for proposed actions that may impact adjacent off-post areas or where pests located in off-post areas are impacting CAARNG property or personnel health.

4. Predator control is coordinated with the USDA, APHIS, ADC regional office or local game enforcement officers when predator control is necessary.

5. Pest management personnel coordinate with the Corps of Engineers to assure that pesticide application, such as termite pretreatment for new construction, is properly performed and documented.

6. CAARNG Site Managers may also coordinate with County Cooperative Extension offices and USDA Natural Resources Conservation Offices to obtain information about the identification and control of specific pests in their locale or to obtain County Soil Surveys.

7. Additional information regarding coordination can be found in Appendix F. CAARNG Points of Contact and Resources Available to Support the CAARNG Pest Management Program can be found in Appendix G.

J. SALE AND DISTRIBUTION OF PESTICIDES.

1. Self-Help Pest Management Program

Chemical and nonchemical pest control items are available to building occupants through the self-help program. Educational materials may be obtained from local County Extension offices and other sources that instruct material users about pests and the use of pest control items. Records must be kept of items issued and used at all CAARNG facilities; this information should be provided yearly to the Pest Management Coordinator for inclusion in the pesticide use data required by the DoD Pest Management Measure of Merit #2. Self-help items are identified in Appendix D. Any deviations from this list require the written approval of the NGB Pest Management Consultant.

2. Other Activities

Minor amounts of pesticides may be sold in AAFES Exchange facilities at the Camps or the AFRC.

K. REGULATED PESTS.

Regulated pests are those regulated by State or federal laws such as noxious weeds, quarantine pests, or pests that may be found on retrograde cargo. Retrograde cargo such as tactical equipment returning from a foreign country are cleared by the USDA, APHIS prior to arriving at CAARNG facilities. Additional information on retrograde cargo may be found in Technical Guide #31, Contingency Retrograde Washdowns: Cleaning and Inspection Procedures

L. PEST MANAGEMENT REFERENCES

The following is a partial list of references that may aid personnel in the CAARNG pest management program. The references listed in this section should be on file at the Pest Management Coordinator's office. A complete listing of pest management references can be found in Appendix K.

1. Federal and State Laws.

a. The Federal Insecticide, Fungicide and Rodenticide Act (thru PL 100-460, 100-464 to 100-526, and 100-532).

b. Title 29, CFR, Current revision, Section 1910, Occupational Safety and Health Standards.

2. DoD Instructions

Department of Defense Instruction 4150.7, Department of Defense Pest Management Program, 22 April 1996.

3. Regulations

a. AR 40-5, Preventive Medicine,15 October 1990.

b. AR 200-1, Environmental Protection and Enhancement, January 2002

c. AR 200-2, Environmental Effects of Army Actions, 23 December 1988.

d. AR 200-5, Pest Management, October 1999

4. Armed Forces Pest Management Board Technical Guides

a. No. 14, Protective Equipment of Pest Control Personnel, March 1992

b. No. 15, Pesticide Spill Prevention Management, June 1992

c. No. 18, Installation Pest Management Program Guide, March 11 2003

d. No. 29, Integrated Pest Management In and Around Buildings, July 2003

5. Other References

a. TB Med 561, Occupational and Environmental Health, Pest Surveillance, June 1992

b. Pest Management Bulletin, Periodic Publication of U.S. Army Center for Health Promotion and Preventive Medicine, Entomological Sciences Division, Aberdeen Proving Ground, MD 21010-5422. Phone DSN 584-3773 to obtain information or be placed on the mailing list.

c. Executive Order 3-112 was signed into effect by President Clinton on 3 February 1999. This EO identifies duties for federal agencies, including use of relevant programs to prevent the introduction of invasive species, rapid response to invasions, accurate and reliable monitoring and inventory of invasive species infestations, research on prevention and control, and invasive species public education.

d. Technical Information Bulletin (TIB), The Defense Pest Management Information Analysis Center, Forest Glen Section, WRAMC, Washington, DC 20307-5001. Phone DSN 295-7476 to obtain information or be placed on the mailing list.

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APPENDIX A, INTEGRATED PEST MANAGEMENT OUTLINES

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INTEGRATED PEST MANAGEMENT OUTLINE NO. 1

PEST: German Cockroaches.

SITE: Offices, Warehouses, Barracks and other Administrative Buildings.

1. Purpose: To control nymphal and adult cockroaches in building areas where people store and/or eat food on an occasional basis (e.g., break areas, coffee rooms, vending areas, etc.).

2. Surveillance.

a. Conducted by: Building occupants and the facility manager(s).

b. Methods: Visual observation (preferably at night) and sticky traps.

c. Frequency: As necessary when a minor infestation of cockroaches occurs.

3. Pest Management Techniques.

a. Nonchemical.

(1) Type: Mechanical and Physical.

(a) Method and Location: Use sticky traps in kitchens, bathrooms, break areas, or other areas where food and water are available. Eliminate cockroach harborage by caulking (or filling with other materials) minor cracks, crevices, holes in walls and floors, or other areas where the structure has provided small openings that could be used by cockroaches.

(b) Conducted by: Occupants - sticky traps and caulking materials can be obtained through self-help or through local purchase. Maintenance personnel may also eliminate cockroach harborage when work is requested or during renovation.

(2) Type: Biological.

(a) Method and Location: None

(b) Conducted by: N/A

(3) Type: Cultural.

(a) Method and Location: Clean up spilled food and store food items in closed containers. Keep break areas clean and clean up spilled food immediately. Rinse out food containers (e.g., soda cans, coffee cups, etc.) to reduce cockroach food. Keep papers, bags, boxes and other items off the floors in the kitchen and bathroom to eliminate harborage areas for the cockroaches. Be sure not to overlook items such as recycle materials, pet food, etc.

(b) Conducted by: Building occupants and the facility manager(s).

b. Chemical.

(1) Basis for Treatment: Presence of cockroaches.

(2) Method and Location: Use self-help items where cockroaches have been seen.

(3) Apply bait stations in locations where cockroaches have been seen (e.g., kitchen and bathroom cabinets, under appliances, under sinks, desks, etc.). Place the bait stations along the junction between walls and floors for maximum effectiveness.

(4) Conducted by: Building occupants and the facility manager(s).

(5) Pesticide: Combat® bait station (regular size) or equivalent.

(6) Control Standard: Continue bait station use for 30-60 days. If cockroaches are still found, then call the contracted pest controller for assistance. Bait stations should be removed when empty or after 60 days, whichever is shorter, to prevent the empty containers from providing cockroach harborage.

c. Chemical.

(1) Basis for Treatment: Large populations of cockroaches still present after self-help measures have been used and failed to control the infestation--an average of more than one roach per trap per night. **Important:** Spraying will not be conducted without conducting surveillance using sticky traps.

(2) Method and Location: Apply residual pesticides to harborage areas in kitchens, bathrooms and other areas where cockroaches are found.

(3) Conducted by: Contracted pest controller.

(4) Pesticide. EPA and state registered pesticide labeled for use at this site.

(5) Control Standard: No live cockroaches found 30 days following treatment. When sanitation and harborage present problems in a facility, a reduction in the number of cockroaches in sticky traps may indicate the effectiveness or limitation of chemical control efforts.

4. Precautions for Sensitive Areas: Cholinesterase inhibiting pesticides are not applied in areas that infants may occupy. Take precautions when treating break areas or areas in which food is stored.

5. Prohibited Practices: Do not apply pesticides on food items, utensils, or food preparation surfaces. Do not let unauthorized personnel in the facility during treatment.

6. Environmental Concerns: None.

7. Remarks: Good sanitation is a fundamental to cockroach elimination. Pesticides should be considered the last option in controlling cockroaches. As long as poor sanitation or harborage exists, the effectiveness of chemicals to control cockroaches may be limited.

INTEGRATED PEST MANAGEMENT OUTLINE NO. 2

PEST: German Cockroaches.

SITE: Food Service Facilities and Armory Kitchens.

1. Purpose: To control nymphal and adult cockroaches in facilities where food is prepared or served.

2. Surveillance.

a. Conducted by: Food service personnel, other building occupants and the facility manager(s).

b. Methods: Visual observation (preferably at night) and sticky traps.

c. Frequency: Daily when the facility is in use; at least monthly when not in use.

3. Pest Management Techniques.

a. Nonchemical.

(1) Type: Mechanical and Physical.

(a) Method and Location: Use sticky traps. Eliminate cockroach harborage by caulking (or filling with other materials) minor cracks, crevices, holes in walls and floors, or other areas where the structure has provided small openings that could be used by cockroaches.

(b) Conducted by: Food service personnel with assistance from the facility manager and maintenance personnel. Sticky traps and caulking materials can be obtained through self-help or through local purchase. Maintenance personnel may also eliminate cockroach harborage when work is requested or during renovation.

(2) Type: Biological.

(a) Method and Location: None

(b) Conducted by: N/A.

(3) Type: Cultural.

(a) Method and Location: Use good sanitation to reduce food and water for cockroaches. Clean up spilled food from work surfaces, walls, and floors. Wash dirty dishes and food containers following use - do not leave exposed food in the facility overnight. Keep papers, bags, boxes and other items off the floors in the kitchen and storerooms to eliminate harborage areas for the cockroaches. Keep food in sealed containers when not in use. Standing water should be eliminated and leaking pipes should be fixed.

(b) Conducted by: Food service personnel and the facility manager(s).

b. Chemical.

(1) Basis for Treatment: Presence of cockroaches.

(2) Method and Location: Use self-help items where cockroaches have been seen. Apply

bait stations in locations where cockroaches have been seen. Place the bait stations along the junction between walls and floors for maximum effectiveness.

(3) Conducted by: Food service personnel and the facility manager(s).

(4) Pesticide: Cockroach bait stations - regular size (Combat/Maxforce or equivalent).

(5) Control Standard: Continue bait station use for 30-60 days. If cockroaches are still found, then call the contracted pest controller for assistance. Bait stations should be removed when empty or after 60 days, whichever is shorter, to prevent the empty containers from providing cockroach harborage.

c. Chemical.

(1) Basis for Treatment: Large populations of cockroaches still present after self-help measures have been used and failed to control the infestation--an average of more than one roach per trap per night. **Important:** Spraying will not be conducted without conducting surveillance using sticky traps.

(2) Method and Location: Crack and crevice residual application.

(3) Conducted by: Contracted pest controller.

(4) Pesticide. EPA and state registered pesticide labeled for use at this site.

(5) Control Standard: No live cockroaches found 30 days following treatment. When sanitation and harborage present problems in a facility, a reduction in the number of cockroaches in sticky traps may indicate the effectiveness or limitation of chemical control efforts.

4. Precautions for Sensitive Areas: Take precautions when treating break areas or areas in which food is stored.

5. Prohibited Practices: Do not apply pesticides on food items, utensils, or food preparation surfaces. Do not let unauthorized personnel in the facility during treatment.

6. Environmental Concerns: None.

7. Remarks: Good sanitation is a fundamental to cockroach elimination. Pesticides should be considered the last option in controlling cockroaches. As long as poor sanitation or harborage exists, the effectiveness of chemicals to control cockroaches may be limited.

INTEGRATED PEST MANAGEMENT OUTLINE NO. 3

PEST: American Cockroaches.

SITE: Sewers, utility tunnels, and crawl spaces.

1. Purpose: To prevent cockroach infestations in basements, crawl spaces, and other belowground or on-ground areas in buildings which are connected to the utility and sewer systems.

2. Surveillance.

a. Conducted by: Building occupants, facility manager(s), or contracted pest controllers.

b. Methods: Visual observation (preferably at night) and sticky traps in manholes, crawl spaces, steam tunnels, etc.

c. Frequency: Quarterly or as needed.

3. Pest Management Techniques.

a. Nonchemical.

(1) Type: Mechanical and Physical.

(a) Method and Location: Eliminate moisture in basements and other belowground areas in buildings that could support. Ventilate wet or damp areas under buildings. In buildings that experience frequent invasion of American cockroaches, drains, particularly those in the basements or on ground level, should have grates or screens over the openings with a mesh size less than 1/8-inch. Utility doors should fit tightly, and pipe chases and other entry points should be sealed.

(b) Conducted by: Facility maintenance personnel or facility manager.

(2) Type: Biological.

(a) Method and Location: None.

(b) Conducted by: N/A

(3) Type: Cultural.

(a) Method and Location: Use good sanitation to reduce food and water for cockroaches. Standing water should be eliminated and leaking pipes should be fixed.

(b) Conducted by: Facility maintenance personnel.

b. Chemical.

(1) Basis for Treatment: Presence of cockroaches.

(2) Method and Location: Use self-help items where cockroaches have been seen. Apply bait stations in locations where cockroaches have been seen. Place the bait stations along the junction between walls and floors for maximum effectiveness.

(3) Conducted by: Building occupants and facility manager(s).

(4) Pesticide: Combat® bait station (large size) or equivalent.

(5) Control Standard: Continue bait station use for 30-60 days. If cockroaches are still found, then call the contracted pest controller for assistance. Bait stations should be removed when empty or after 60 days, whichever is shorter, to prevent the empty containers from providing cockroach harborage.

c. Chemical.

(1) Basis for Treatment: Large populations of cockroaches still present after self-help measures have been used and failed to control the infestation--an average of more than one roach per trap per night. **Important:** Spraying will not be conducted without conducting surveillance using sticky traps.

(2) Method and Location: Crack and crevice residual application.

(3) Conducted by: Contracted pest controller.

(4) Pesticide. EPA and state registered pesticide labeled for use at this site.

(5) Control Standard: No live cockroaches found 30 days following treatment. When sanitation and harborage present problems in a facility, a reduction in the number of cockroaches in sticky traps may indicate the effectiveness or limitation of chemical control efforts.

4. Precautions for Sensitive Areas: Take precautions when treating break areas or areas in which food is stored.

5. Prohibited Practices: Do not apply pesticides on food items, utensils, or food preparation surfaces. Do not let unauthorized personnel in the facility during treatment.

6. Environmental Concerns: None.

7. Remarks: Good sanitation is a fundamental to cockroach elimination. Pesticides should be considered the last option in controlling cockroaches. As long as poor sanitation or harborage exists, the effectiveness of chemicals to control cockroaches may be limited. American cockroaches are not a problem as long as they stay in the sewer system. However, at times the cockroaches invade buildings (e.g., break in the sewer line). Treatment should proceed from the place where cockroaches cause problems in buildings back to their harborage sites in the sewers or other underground places. If this is not done, then treatment in underground cockroach harborage sites may drive additional insects into buildings not previously experiencing problems.

INTEGRATED PEST MANAGEMENT OUTLINE NO. 4

PEST: Filth Flies.

SITE: Food service facilities.

1. **Purpose:** To control filth flies in facilities where food is prepared or served.

2. **Surveillance.**

   a. **Conducted by:** Food service personnel, building occupants, and facility manager(s).

   b. **Methods:** Visual observation.

   c. **Frequency:** Daily when facilities are in use.

3. **Pest Management Techniques**.

   a. **Nonchemical.**

      (1) **Type: Mechanical and Physical.**

      (a) Method and Location: Sticky flytraps may be used in areas that are not directly over prepared food or food preparation surfaces. This method may be effective when only a few flies are found indoors. Fly grids designed to stun and capture flies on a sticky surface may be used in kitchen and eating areas (as opposed to older fly grids which are designed to electrocute flies causing them to explode and fragment). Traps equipped with a blacklight and a sticky surface (but no electric grid) are also successful.

      (b) Conducted by: Food service personnel.

      (2) **Type: Mechanical and Physical.**

      (a) Method and Location: Screens should be used to preclude fly entry when doors and windows are to be left open. Automatic self-closing devices should be placed on outer doors to reduce the time open doors permit fly entry. Air curtains may also be used at entry points, but must be installed and maintained correctly to blow flies away from the entrance and not into the entrance and should cover the entire door width.

      (b) Conducted by: Building maintenance personnel. However, keeping doors closed when not in use is the responsibility of food service personnel.

      (3) **Type: Biological.**

      (a) Method and Location: None.

      (b) Conducted by: N/A

(4) Type: Cultural.

(a) Method and Location: Use good sanitation to reduce food and water that attract flies. Clean up spilled food from work surfaces, walls and floors. Wash dirty dishes and cooking containers following use - do not leave exposed food in the facility overnight. Place garbage in sealable bags. Place the bags in containers with tight fitting lids and keep containers closed when not in use. Do not place dumpsters within 50 feet of the facility.

(b) Conducted by: Food service personnel.

b. Chemical.

(1) Basis for Treatment: Presence of flies within the facility.

(2) Method and Location: Contact treatment with an aerosol insecticide.

(3) Conducted by: Food service personnel.

(4) Pesticide: Pyrethrin fly spray (e.g., d-trans allethrin and resmethrin, NSN: 6840-01-067-2137)

(5) Control Standard: Absence of flies in the facility.

4. Precautions for Sensitive Areas: See pesticide label for precautions.

5. Prohibited Practices: Do not apply pesticides on food items, utensils, or on food preparation surfaces.

6. Environmental Concerns: None.

7. Remarks: Good sanitation should virtually eliminate fly problems at food service facilities. The pesticide listed above should be the only chemical control used. If flies are coming into the facility from a nearby source (e.g., farm, dump, etc.), then maintenance personnel would be notified to look into the problem. Refuse containers need to be cleaned weekly in the summer months to preclude fly breeding.

INTEGRATED PEST MANAGEMENT OUTLINE NO. 5

PEST: Stored Product Insects.

SITE: Food storage warehouses and food handling buildings.

1. Purpose: To control insects that damage food and fiber products.

2. Surveillance.

a. Conducted by: Facility personnel and/or contracted pest controller.

b. Methods: Visual observations for insects and/or conditions that could favor insect infestations in stored food products. Particular attention should be given to rodent bait stations when they are in use since most baits are subject to insect infestation. Augment visual observations with pheromone and sticky traps.

c. Frequency: Daily in food service facilities - food service personnel; monthly in warehouses - facility personnel.

3. Pest Management Techniques.

a. Nonchemical.

(1) Type: Mechanical and Physical.

(a) Method and Location: Clean up spilled food materials that may attract and provide a food source for insects at least daily. Vacuuming works better than sweeping in particle-filled cracks and crevices.

(b) Conducted by: Facility personnel.

(2) Type: Biological.

(a) Method and Location: None.

(b) Conducted by: N/A

(3) Type: Cultural.

(a) Method and Location: Damaged goods should be kept in tight-fitting containers. Infested products are removed immediately upon discovery.

(b) Conducted by: Facility personnel.

b. Chemical.

(1) Basis for Treatment: Presence of insects in products or in the food storage area.

(2) Method and Location: Chemical treatment around pallets, floor/wall interfaces, and other areas where insects are present.

(3) Conducted by: Contracted pest controller.

(4) Pesticide: EPA and state registered product for this site.

(5) Control Standard: No evidence of insects for 30 days following treatment.

4. Precautions for Sensitive Areas: See pesticide label for precautions.

5. Prohibited Practices: Do not apply pesticides on food items or packages/outer wrapping of food.

6. Environmental Concerns: None.

7. Remarks: None.

INTEGRATED PEST MANAGEMENT OUTLINE NO. 6

PEST: Mosquitoes.

SITE: Training, recreation, or other outdoor sites.

1. Purpose: To control adult mosquitoes at the Camps, Armories or other facilities and training areas.

2. Surveillance.

a. Conducted by: Facility personnel and local mosquito control personnel if necessary.

b. Methods: Personnel complaints and visual observations of mosquito populations. If mosquito populations reach nuisance or medically important levels, the facility manager will request assistance from the local mosquito control district.

c. Frequency: On-going from April through the end of October.

3. Pest Management Techniques.

a. Nonchemical.

(1) Type: Mechanical and Physical.

(a) Method and Location: Screens should be placed on windows on buildings to exclude adult mosquitoes. Temporary standing water sites should be graded or filled to eliminate mosquito breeding. Empty containers that may serve as mosquito-breeding sites should be removed. Change the water in birdbaths every four days. Precautions must be taken not to damage wetlands.

(b) Conducted by: Facility maintenance or grounds keeping personnel.

(2) Type: Biological.

(a) Method and Location: *Bacillus thuringiensis* (*B.t.*) applied to mosquito larvae found in standing water. If effective, no live mosquito larvae should be present 5 days after treatment.

(b) Conducted by: Local mosquito controller.

(3) Type: Cultural.

(a) Method and Location: Eliminate artificial container breeding sites.

(b) Conducted by: Facility maintenance or grounds keeping personnel.

b. Chemical.

(1) Basis for Treatment: Mosquitoes interfere with performance of the mission or have the potential to vector diseases.

(2) Method and Location: Ultra low volume treatment of resting and breeding areas.

(3) Conducted by: Local mosquito controller (e.g., mosquito control district).

(4) Pesticide: EPA and state registered product for area mosquito control.

(5) Control Standard: Mosquitoes are reduced to an acceptable level based on disease potential or mission performance.

c. Chemical.

(1) Basis for Treatment: Same as above.

(2) Method and Location: Larval control using a residual pesticide application in standing water, flood land, tire piles, and other breeding areas.

(3) Conducted by: Local mosquito controller (e.g., mosquito control district) or pest control contractor.

(4) Pesticide: Altosid ® (methoprene briquets), Bactimos ® granules or other EPA registered mosquito larvicide.

(5) Control Standard: Same as above..

4. Precautions for Sensitive Areas: Do not apply pesticide spray when wind speeds exceed five miles per hour. See pesticide label for other precautions.

5. Prohibited Practices: Do not apply pyrethroids near honeybee colonies.

6. Environmental Concerns: Take extra precautions when treating near wetlands (adult mosquito control products) or in the habitat of an endangered or threatened species (see precautions on the pesticide labels). Do not damage or eliminate wetland ecosystems. For locations of wetland ecosystems, refer to the Integrated Natural Resources Plan.

7. Remarks: Mosquito control may require coordination with state and local mosquito control resources.

INTEGRATED PEST MANAGEMENT OUTLINE NO. 7

PEST: Ants.

SITE: In and around buildings.

1. **Purpose:** To eliminate nuisance ant populations.

2. **Surveillance.**

   a. **Conducted by:** Building occupants, facility manager, and contracted pest controllers.

   b. **Methods:** Visual observations and sticky traps.

   c. **Frequency:** On going as required.

3. **Pest Management Techniques**.

   a. **Nonchemical.**

      (1) **Type: Mechanical and Physical.**

      (a) Method and Location: Caulk cracks, crevices, holes in walls and floors, and other points of entry through which ants can gain access to the building.

      (b) Conducted by: Building occupants and/or the facility manager.

      (2) **Type: Biological.**

      (a) Method and Location: None.

      (b) Conducted by: N/A

      (3) **Type: Cultural.**

      (a) Method and Location: Sanitation. Clean up spilled food and place stored food items in closed containers. Keep break areas clean and clean up spilled food immediately. Rinse out food containers (e.g., soda cans, coffee cups, etc.) to reduce food that attracts ants. Be sure not to overlook items such as recycle materials, pet food, etc.

      (b) Conducted by: Building occupants and/or the facility manager.

   b. **Chemical**.

      (1) **Basis for Treatment:** Presence of ants in buildings.

      (2) **Method and Location:** Bait stations placed along baseboards and runways used by ants.

      (3) **Conducted by:** Building occupants or the facility manager.

      (4) **Pesticide:** Maxforce® ant baits or equivalent.

      (5) **Control Standard:** Elimination of ants.

c. Chemical.

(1) Basis for Treatment: Presence of nuisance ant populations in buildings.

(2) Method and Location: Crack and crevice treatment along ant runways and in entry points.

(3) Conducted by: Contracted pest controller.

(4) Pesticide: An EPA and state registered pesticide labeled for use on the target pest and appropriate site.

(5) Control Standard: Elimination of ants.

4. Precautions for Sensitive Areas: See pesticide label for precautions.

5. Prohibited Practices: Do not apply pesticides on food items or packages/outer wrapping of food.

6. Environmental Concerns: None.

7. Remarks: Ant problems are usually seasonal and can be extensive when they occur.

INTEGRATED PEST MANAGEMENT OUTLINE NO. 8

PEST: Mice.

SITE: All buildings.

1. Purpose: To control mice in warehouses, offices, and other administrative buildings.

2. Surveillance.

a. Conducted by: Food service personnel, building occupants, facility manager(s), and contracted pest controllers.

b. Methods: Visual observation for mouse damage and droppings.

c. Frequency: Daily by building occupants. As required by pest controllers and facility managers.

3. Pest Management Techniques.

a. Nonchemical.

(1) Type: Mechanical and Physical.

(a) Method and Location: Dap up any opening to a building greater than 1/4-inch, with particular attention to clearance between doorjambs and building entryways where pipes and other utilities enter the building. Use snap traps and sticky glue boards first to capture mice upon discovery of an infestation (or to determine whether there is an infestation).

(b) Conducted by: Facility personnel/building occupants may set traps and place glue boards for minor infestations. Contract pest controllers should handle extensive infestations (.25 on one trap per night). Public works or maintenance staff should modify building to exclude all rodents.

(2) Type: Biological.

(a) Method and Location: None.

(b) Conducted by: N/A

(3) Type: Cultural.

(a) Method and Location: Use good sanitation to preclude food and water for mice. Clean up spilled food from work surfaces and floors and do not leave exposed food in the facility overnight. Remove bags, boxes, pallets, and other potential harborage from basements, kitchens, closets, etc. Keep salvage areas and break areas clean at all times. Keep food in closed containers. Store food pallets at least 24 inches from walls to permit routine cleaning, inspection, and rodent control.

(b) Conducted by: All facility personnel.

b. Chemical.

(1) Basis for Treatment: Mice or evidence of mice found during surveillance.

(2) Method and Location: Bait stations located in buildings with rodent infestations.

(3) Conducted by: Contracted pest controller.

(4) Pesticide: Anticoagulant rodent bait such as diphacinone or brodifacoum

(5) Control Standard: No product or building damage from mice. Significant reduction in the number of mouse droppings should be seen around bait stations within 30 days following bait placement.

4. Precautions for Sensitive Areas: See pesticide label for precautions.

5. Prohibited Practices: Keep out of reach of children, pets, and other non-target animals. Place baits in tamper proof containers.

6. Environmental Concerns: None.

7. Remarks: Service bait stations at least monthly. Consider use of rodenticides after other methods are not effective in controlling mice. If entry points to buildings cannot be eliminated, then trapping or baiting may be the only alternative control. Continued presence of spilled food products and/or poor housekeeping (e.g., pallets against the wall, old boxes and equipment in store rooms, etc.) will adversely impact any baiting or trapping program.

INTEGRATED PEST MANAGEMENT OUTLINE NO. 9

PEST: Vegetation.

SITE: Utility poles, sidewalks, around buildings foundations, parking lots, fence lines, and other areas where vegetation is not wanted.

1. Purpose: To control undesirable vegetation in order to minimize damage to property, and to limit risk of fire or security breaches.

2. Surveillance.

a. Conducted by: Building occupants, the facility manager(s), and grounds personnel.

b. Methods: Visual observation.

c. Frequency: Ongoing through the growing season (March through September).

3. Pest Management Techniques.

a. Nonchemical.

(1) Type: Mechanical and Physical.

(a) Method and Location: Mowing and weed eaters may be labor-intensive. Once vegetation is cut, new growth occurs rapidly; frequent cutting is necessary. Burning is an option in areas where the firing can be controlled. Seed bank response will vary.

(b) Conducted by: Occupants, facility manager, groundskeepers, fire department staff.

(2) Type: Biological.

(a) Method and Location: For a mixture of plant species, none usually available.

(b) Conducted by: N/A

(3) Type: Cultural.

(a) Method and Location: None.

(b) Conducted by: N/A

b. Chemical.

(1) Basis for Treatment: Vegetation present around buildings, along fence lines, etc.

(2) Method and Location: Hand or power sprayer. Selection of herbicide must include full consideration of water movement through the site, avoiding herbicides (e.g., bromacil) that have potential to leach through or migrate off-site. Apply herbicide to unwanted vegetation in accordance with label directions.

(3) Conducted by: Certified pest controller (Camp/AFRC/ armory grounds maintenance staff or contracted pest controller).

(4) Pesticide. EPA and state registered herbicides for site use on the target plant species. Applicators must select herbicides carefully with attention to potential for lateral movement, avoiding use of those herbicides that readily move sideways or off-site with seasonal precipitation.

(5) Control Standard: Vegetation is killed within two weeks following treatment.

4. Precautions for Sensitive Areas: Avoid contact with foliage, green stems or fruit of desirable plants and trees. Avoid direct application to any body of water. Avoid drift that could damage desirable plants; do not spray if wind speed is in excess of five miles per hour.

5. Prohibited Practices: None.

6. Environmental Concerns: None.

7. Remarks: An invasive species vegetation control program is described in Appendix I. This IPM Outline does not address invasive and noxious weeds

INTEGRATED PEST MANAGEMENT OUTLINE NO. 10

PEST: Bees and Wasps.

SITE: In and around buildings and recreational areas.

1. Purpose: To control stinging insects in and around occupied buildings and recreational areas.

2. Surveillance.

a. Conducted by: Building occupants, facility manager(s), and contracted pest controllers.

b. Methods: Visual observation for nests or hives.

c. Frequency: Daily by building occupants. As required by pest controllers and facility managers.

3. Pest Management Techniques.

a. Mechanical and Physical

(1) Mechanical and Physical

(a) Exclusion: Screen windows and doors, caulk around windows, remove wasp nests, and bee swarms.

(b) Capture: Knockdown wasp nests from eaves, bee swarms from trees, and box/bag (beekeepers are often willing to remove bee colonies). Vacuum collect free-flying insects,

(c) Conducted by: Facility personnel/building occupants with the exception of the bee swarm removal.

(2) Type: Biological.

(a) Method and Location: None.

(b) Conducted by: N/A

(3). Cultural.

(a) Method and Location: None.

(b) Conducted by: N/A

b. Chemical.

(1) Basis for Treatment: Bees and wasps found in and around buildings and recreational areas.

(2) Method and Location: Hand-held aerosol applied directly to insects and nests.

(3) Conducted by: Facility personnel/building occupants.

(4) Pesticide: Commercially available, pyrethrin based wasp and hornet spray or wasp-

freeze, which is available through the national stock system.

(5) Control Standard: No wasp/bee activity in or around buildings and recreational areas.

c. Chemical.

(1) Basis for Treatment: Bees and wasps found in and around buildings and recreational areas.

(2) Method and Location: Spray applied directly to nests.

(3) Conducted by: Contracted pest controllers.

(4) Pesticide: An EPA and state registered pesticide labeled for use on the target pest and appropriate site.

(5) Control Standard: No wasp/bee activity in or around buildings and recreational areas.

4. Precautions for Sensitive Areas: See pesticide label for precautions. Treat with insecticide only where unwanted bees and wasps are found; most insecticides are extremely toxic to bees and may harm these insects where they are not presenting a problem. Areas where bees are beneficial to man (e.g., bee hives, flower beds, etc.) should be avoided.

5. Prohibited Practices: None.

6. Environmental Concerns: None.

7. Remarks: Beekeepers should be called to remove swarms without using chemicals.

INTEGRATED PEST MANAGEMENT OUTLINE NO. 11

PEST: Ticks.

SITE: In recreational, training, and other outdoor areas.

1. Purpose: To prevent ticks from biting people.

2. Surveillance.

a. Conducted by: Individuals in outdoor areas and the facility manager(s).

b. Methods: Individual complaints.

c. Frequency: On-going.

3. Pest Management Techniques.

a. Nonchemical.

(1) Type: Mechanical and Physical.

(a) Method and Location: Proper wearing of clothing outdoors can prevent ticks from attaching to skin. Long pants should be worn and tucked into boots or socks. Personal hygiene checks should be made daily to look for ticks attached to or crawling on the body.

(b) Conducted by: Site users, particularly soldiers in training areas.

(2) Type: Biological.

(a) Method and Location: None.

(b) Conducted by: N/A

(3) Type: Cultural.

(a) Method and Location: Site avoidance. If areas are known to have large tick populations, alternative areas should be selected.

(b) Conducted by: Site users, leaders and planners.

b. Chemical.

(1) Basis for Treatment: Ticks expected in the area.

(2) Method and Location: Repellent applied to the skin.

(3) Conducted by: Site users.

(4) Pesticide: Military issue DEET or equivalent.

(5) Control Standard: Ticks do not attach to skin for feeding.

c. Chemical.

(1) Basis for Treatment: Ticks expected in the area.

(2) Method and Location: Repellent applied to clothing.

(3) Conducted by: Site users.

(4) Pesticide: Military issue or commercially available Permethrin (tick repellent).

(5) Control Standard: Ticks do not attach to skin for feeding.

d. Chemical.

(1) Basis for Treatment: Ticks frequently found on troops.

(2) Method and Location: Barrier treatment around bivouac area.

(3) Conducted by: Contracted pest controllers.

(4) Pesticide: EPA and state registered tick control product.

(5) Control Standard: Ticks not found within treated area while troops are present.

4. Precautions for Sensitive Areas: See pesticide label for precautions.

5. Prohibited Practices: See pesticide label.

6. Environmental Concerns: See pesticide label.

7. Remarks: Ticks are mainly encountered at Camp Roberts and Camp San Luis Obispo. Ticks are usually not a problem at armories or other facilities because of the lack of suitable outdoor habitat.

INTEGRATED PEST MANAGEMENT OUTLINE NO. 12

PEST: Termites.

SITE: Buildings and other structures.

1. Purpose: To prevent termites from damaging wooden structures on government property.

2. Surveillance.

a. Conducted by: Facility manager and contracted pest controller.

b. Methods: Visual observation for termites and/or conditions that could favor termite infestations.

c. Frequency: Annually. May be done in conjunction with service orders for other pest control when convenient.

3. Pest Management Techniques.

a. Nonchemical.

(1) Type: Mechanical and Physical.

(a) Method and Location: Eliminate water sources that could support termite colonies. This is most likely to occur in areas where broken water lines provide water near foundations and under buildings. Ventilate damp areas under buildings. Repair and replace infested wood and structural material.

(b) Conducted by: Facility personnel.

(2) Type: Biological.

(a) Method and Location: None.

(b) Conducted by: N/A

(3) Type: Cultural.

(a) Method and Location: Area sanitation including removal of old wood and water sources that could support termite colonies.

(b) Conducted by: Facility personnel.

b. Chemical.

(1) Basis for Treatment: New construction and when active termite colonies are found.

(2) Method and Location: Sub-slab or trench treatments

(3) Conducted by: Contracted pest controller.

(4) Pesticide: Non-repellent termiticide

(5) Control Standard: No subsequent termite infestation or damage of treated structures

for five years after application.

4. Precautions for Sensitive Areas: See pesticide label for precautions. Avoid getting pesticide in areas where water can become contaminated, and in air ducts of buildings. Do not apply when people are in the building.

5. Prohibited Practices: None.

6. Environmental Concerns: None.

7. Remarks: None

INTEGRATED PEST MANAGEMENT OUTLINE NO. 13

PEST: Tent caterpillars, Elm Leaf Beetles, and other Leaf Eating Insects.

SITE: Hardwood trees.

1. Purpose: To prevent damage to hardwood trees.

2. Surveillance.

a. Conducted by: Facility personnel.

b. Methods: Visual observation for larvae.

c. Frequency: As required (April - September).

3. Pest Management Techniques.

a. Nonchemical.

(1) Type: Mechanical and Physical.

(a) Method and Location: Minor webs containing larvae can be physically removed from the trees.

(b) Conducted by: Facility personnel.

(2) Type: Biological.

(a) Method and Location: None.

(b) Conducted by: N/A

(3) Type: Cultural.

(a) Method and Location: None.

(b) Conducted by: N/A

b. Chemical.

(1) Basis for Treatment: Caterpillars are damaging trees.

(2) Method and Location: Ground spray.

(3) Conducted by: Contracted pest controllers.

(4) Pesticide: *Bacillus thuringiensis* (*B.t.*) or other suitable insecticide.

(5) Control Standard: No larvae observed for 30 days after treatment.

4. Precautions for Sensitive Areas: See pesticide label for precautions. Do not apply when people or pets are in the area.

5. Prohibited Practices: None.

6. **Environmental Concerns:** Do not apply to areas where beneficial insects are present.

7. **Remarks:** None.

INTEGRATED PEST MANAGEMENT OUTLINE NO. 14

PEST: Miscellaneous arthropods (e.g., crickets, earwigs, beetles, silver fish, spiders).

SITE: In all buildings.

1. Purpose: To control insects and other arthropods that occasionally invade buildings.

2. Surveillance.

a. Conducted by: All personnel.

b. Methods: Individual complaints and observations.

c. Frequency: On-going.

3. Pest Management Techniques.

a. Nonchemical.

(1) Type: Mechanical and Physical.

(a) Method and Location: Maintain screens and weather-stripping around doors and windows to exclude nuisance pests. Place sticky traps along baseboards in areas where crickets, spiders, earwigs and other nuisance arthropods are seen.

(b) Conducted by: Building occupants.

(2) Type: Biological.

(a) Method and Location: None.

(b) Conducted by: N/A

(3) Type: Cultural.

(a) Method and Location: Good housekeeping. Nuisance arthropods will hide in areas that are cluttered with trash, old boxes, etc. Clean up these areas to minimize infestations.

(b) Conducted by: Building occupants.

b. Chemical.

(1) Basis for Treatment: Infestations remain after all nonchemical control methods have been implemented.

(2) Method and Location: Hand-held aerosol applied directly to insects.

(3) Conducted by: Building occupants.

(4) Pesticide: EPA and state registered, commercially available, pyrethrin based aerosol spray labeled for the target pest and appropriate site or the aerosol insecticide available through self-help.

(5) Control Standard: Nuisance pest infestations are controlled to a tolerable level.

c. Chemical.

(1) Basis for Treatment: Infestations remain after commercially available aerosol spray is used.

(2) Method and Location: Spot and/or crack and crevice treatment in areas where pests are seen.

(3) Conducted by: Contracted pest controller.

(4) Pesticide: An EPA and state registered pesticide labeled for use on the target pest and appropriate site.

(5) Control Standard: Infestation is controlled to a tolerable level.

4. Precautions for Sensitive Areas: See pesticide label for precautions.

5. Prohibited Practices: None.

6. Environmental Concerns: None.

7. Remarks: Most nuisance arthropods are minor pests and are easily controlled through nonchemical methods or light chemical treatments.

INTEGRATED PEST MANAGEMENT OUTLINE NO. 15

PEST: Bats.

SITE: Offices buildings, warehouses, barracks and other administrative buildings.

1. Purpose: To control bat infestations in buildings.

2. Surveillance.

a. Conducted by: Building occupants and the facility manager(s).

b. Methods: Visual observation of bats and/or droppings.

c. Frequency: Ongoing

3. Pest Management Techniques.

a. Nonchemical.

(1) Type: Mechanical and Physical.

(a) Method and Location: Exclusion is the only ecological viable method to eliminate bats from a structure. Positive species identification is essential. Consult U.S. Fish and Wildlife Service if the bats are an endangered species. To prevent trapping young bats inside structures, efforts to exclude bats will only be taken after juvenile bats can fly. All entry points should be covered with netting or other baffles that allow exit but not entry to the building. Two to four weeks after successful exclusion is complete, remove the netting and permanently cover the entry points. Live trapping will only be conducted if exclusion efforts fail.

(b) Conducted by: Occupants, facility manager, and contracted pest controller.

(2) Type: Biological.

(a) Method and Location: None.

(b) Conducted by: N/A

(3) Type: Cultural.

(a) Method and Location: Construction of bat houses may serve as an alternative home for bats displaced from buildings.

(b) Conducted by: Camp/Facility maintenance personnel.

b. Chemical.

(1) Basis for Treatment:

(2) Method and Location: None

(3) Conducted by: N/A

(4) Pesticide: None

(5) Control Standard: N/A

4. Precautions for Sensitive Areas: Bats that have come in contact with humans or pets will be tested for rabies.

5. Prohibited Practices: Bats are protected and many species are endangered. Bats will not be killed unless suspected of rabies. Check state and local regulations prior to implementing control measures.

6. Environmental Concerns: None.

7. Remarks: Bats are beneficial in that they eat many insects. Bats should only be controlled when they interfere with the mission. This occurs when urine and droppings damage equipment or cause objectionable odors in buildings. All personnel who are in an enclosed area with a live bat, are touched, or bitten, urinated on, or scratched must receive rabies treatment unless otherwise recommended by a physician. This includes personnel sleeping in a room where bats are found. Pest management personnel who control bats must receive rabies prophylaxis. Personnel who clean up bat guano are required to wear personal protective clothing and equipment. See: U.S. Army Center for Health Promotion and Preventive Medicine Technical Guide No. 142, "Managing Health Hazards Associated with Bird and Bat Excrement".

INTEGRATED PEST MANAGEMENT OUTLINE NO. 16

PEST: Snakes.

SITE: Outdoor areas.

1. Purpose: To remove snakes, especially poisonous species, from outdoor areas where human activity is likely.

2. Surveillance.

a. Conducted by: All personnel.

b. Methods: Visual observation.

c. Frequency: As necessary when snakes are encountered in an unwanted area.

3. Pest Management Techniques.

a. Nonchemical.

(1) Type: Mechanical and Physical.

(a) Method and Location: Capture with snake loop and removal.

(b) Conducted by: Contracted pest controller or Military/Security Police.

(2) Type: Biological.

(a) Method and Location: None.

(b) Conducted by: N/A

(3) Type: Cultural.

(a) Method and Location: Avoidance. If at all possible, bypass snakes. Snakes generally prefer to avoid people. Most encounters with snakes can be avoided by simply allowing the snake to leave the area. The biggest risk of snakebites comes from people going out of their way to handle or otherwise provoke snakes into a defensive attitude. If snakes cannot be avoided, pest controllers or Military/Security Police should be called. **Do not harm or kill snakes!**

(b) Conducted by: Personnel encountering snakes.

b. Chemical.

(1) Basis for Treatment: None.

(2) Method and Location: None.

4. Precautions for Sensitive Areas:

5. Prohibited Practices: Do not kill snakes.

6. Environmental Concerns: None.

7. Remarks: Snakes, both poisonous and nonpoisonous, will be captured alive and removed to a location where they will not cause harm or disrupt activities

INTEGRATED PEST MANAGEMENT OUTLINE NO. 17

PEST: Birds.

SITE: Offices buildings, warehouses, loading docks, barracks and other administrative buildings.

1. Purpose: To prevent birds from nesting or roosting in areas where they will damage property or contaminate food products or other material.

2. Surveillance.

a. Conducted by: Building occupants and the facility manager(s).

b. Methods: Visual observation of birds and/or droppings. Determine if birds are native or invasive species.

c. Frequency: Ongoing

3. Pest Management Techniques.

a. Nonchemical.

(1) Type: Mechanical and Physical.

(a) Method and Location: Screen or close openings to buildings. Occupants can do minor repairs; major repairs should be done by facility maintenance. Live traps can be used to capture and relocate birds from inside buildings and from roosting areas on or near buildings (this may only be effective for pigeons).

(b) Conducted by: Occupants and facility manager.

(2) Type: Biological.

(a) Method and Location: None.

(b) Conducted by: N/A

(3) Type: Cultural.

(a) Method and Location: Keep loading doors and unscreened windows closed when not in use. Discourage personnel from feeding birds, especially pigeons.

(b) Conducted by: Building occupants.

b. Chemical.

(1) Basis for Treatment: Presence of birds after nonchemical methods have been tried and failed to control the infestation.

(2) Method and Location: Application of treated bait to areas where unwanted birds feed.

(3) Conducted by: Contracted pest controller.
(4) Pesticide: EPA and state registered avicide to be determined by a contractor.

(5) Control Standard: Birds do not return for 7 days following treatment.

4. Precautions for Sensitive Areas: Restrictions on the pesticide label must be enforced.

5. Prohibited Practices: See label specifications.

6. Environmental Concerns: Do not treat in areas that may be frequented by endangered, threatened, or protected birds (including migratory birds).

7. Remarks: Avicides should only be considered as a last resort--their use should only be considered after nonchemical efforts have failed. If the pest birds are an invasive species, they may be destroyed. Control of native species is a more sensitive issue. Avicides that do cause secondary poisoning of non-target species of birds or other animals should not be used.

INTEGRATED PEST MANAGEMENT OUTLINE NO. 18

PEST: Miscellaneous vertebrate pests (e.g., stray dogs and cats, skunks, raccoons, opossums, squirrels)

SITE: In and around buildings.

1. **Purpose:** To control vertebrate pests in and around buildings.

2. **Surveillance.**

   a. **Conducted by:** Building occupants and the facility manager(s).

   b. **Methods:** Visual observation.

   c. **Frequency:** Ongoing

3. **Pest Management Techniques**.

   a. **Nonchemical.**

      (1) **Type: Mechanical and Physical.**

      (a) Method and Location: Live trapping (if applicable) with wire or solid cage traps. Release wild animals in remote areas. Take cats and dogs to a local animal shelter.

      (b) Conducted by: Contracted pest controller or Military/Security Police.

      (2) **Type: Biological.**

      (a) Method and Location: None.

      (b) Conducted by:

      (3) **Type: Cultural.**

      (a) Method and Location: Good sanitation. Animals are attracted to uncovered trash and debris. Place all trash in covered dumpsters or closed trash cans. Screen or repair entry points through which animals can gain access to crawl spaces, attics, etc.

      (b) Conducted by: Building occupants and the facility manager.

   b. **Chemical**.

      (1) **Basis for Treatment:** None.

      (2) **Method and Location:** None.

      (3) **Conducted by:** N/A

      (4) **Pesticide:** None

      (5) **Control Standard:**

4. **Precautions for Sensitive Areas:** None.

5. Prohibited Practices: None.

6. Environmental Concerns: None.

7. Remarks: Domestic cats are often abandoned on military installations by their owners. Over time, these cats and their offspring become feral and live under buildings. Not only do these cats carry diseases, but their fleas also pose a health threat to personnel working in and around the buildings. Feeding of feral cats should be discouraged. Cats that appear to be without ownership should be captured and removed as quickly as possible.

APPENDIX B, ARMORY/FACILITY MANAGER'S CHECKLIST

☐ Read and understand the requirements outlined in this plan.

☐ Use all self-help pest control techniques recommended in the IPM outlines (Appendix A) before requesting further assistance from the CAARNG Pest management Coordinator for contracting pest control professionals.

☐ First, apply good sanitary practices to prevent pest infestations (and re-infestations).

☐ Apply only pesticides approved and recommended by the IPM outlines for self-helpuse(Appendix A).

☐ Use this plan as a guide to evaluate pest controllers.

☐ Ensure pest controllers operate in accordance with the integrated pest management outlines(Appendix A).

☐ Ensure all pest control operations are recorded and reported to the Pest Management Coordinator. Pest control operations include activities such as surveillance time, both non-chemical and chemical applications. Consult Appendix C, Pest Management Records, for examples of recommended pest management maintenance records.

☐ Monitor the storage and distribution of pesticides used for self-help.

☐ Monitor certification of contracted pesticide applicators.

☐ Coordinate with local health officials to determine the prevalence of disease vectors and other public health pests in the area surrounding the facility.

☐ Cooperate fully with the pest management contractors or military pest management personnel in scheduling pest management operations and preparing the areas to be treated.

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APPENDIX C, PEST MANAGEMENT RECORDS

Reports and Records.

1. Adequate records of all pest management operations performed by contractors or supporting military pest management personnel will be maintained by the local Facility Manager. When pest control operations are accomplished for a structure or an area, record them on the record form, then file the pest management maintenance record for future use.

2. Contracted pest management personnel record and submit pesticide application and surveillance activity to the Facility Manager. The information received must include the information needed to properly fill out the Pest Management Maintenance Record (DD Form 1532-1). The contractor can either fill out the DD Form 1532-1 or provide a suitable equivalent.

3. A DD Form 1532-1 will be kept on file for each building in which pest management activity is performed. These forms provide a permanent historical record of pest management operations for each building, structure or outdoor site on every facility under the CAARNG's control.

4. The Pest Management Maintenance Record (DD Form 1532-1) provides a standard method for recording pesticide use and other pest control information at CAARNG facilities. Use of the record complies in part with Federal Regulation 40 CFR 171.11c (7) of the Federal Insecticide, Fungicide and Rodenticide Act, as amended. It is used as a permanent maintenance record and history of pest control operations at a particular site (structure or area). The record also provides continuity in the management and performance of pest control operations at the command level. Use and analysis of these records will identify structures, designs and areas that have significantly more pest problems than others do. Historical pest control data can be used to verify warranties, correlate sites and treatment, and to facilitate cost effective pest management.

5. An example of a Pest Management Maintenance Record is attached.

Data Entry on DD Form 1532-1

1. On the top of the record, in the space marked "Bldg/Area", enter the building or structure number when a maintenance record is needed. This number may be found on the installation in the facilities inventory, usually available from the Facility Management Office. Similarly, for outdoor areas to be maintained on record, enter a description or area number, if available. In the next space, enter the size of the item to be maintained. A legend at the bottom of the record provides standard measurement units. In the space marked "Type of Construction", enter the code letters from the legend to designate the major type of construction. More than one set of code letters may be used, if desired. In the last space marked "Use Designation", enter information to identify the major use of the building, structure or area.

2. Enter the following information for each pest control operation conducted at the structure or area.

a. Date. Enter the date of the operation in the date column as year, month, and day.

b. Units Serviced and Work Origin. Enter the part of the building involved, such as room or apartment number, or in the case of outdoor areas, a site designation such as "south section of parade ground" or "trees". Enter also the work origin using the symbols in the legend to show how the work was initiated.

c. Units of Measure. Enter the size of the treated or protected area using the measurement units in the legend.

d. Target Pest. Enter the name of the target pest. Be specific, if possible.

e. Control Operation. Enter information to identify how the control operation was performed (e.g., misting, hand spraying, fogging, trapping).

f. Pesticide use. If pesticide was used, enter the pesticide name and EPA registration number in the first space, enter the concentration of the finished formulation in the middle space, and the amount or quantity used in the last space. If no pesticide was used, leave this section blank.

g. Labor Time. Enter the time required for the pest control operation in this space. Include all time associated with the job, for example: travel preparation, execution and cleanup. Do not include the pretreatment inspection or post-treatment survey.

h. Application Initials. Enter the initials of the individual responsible for performing the work. If more than one person was involved, the crew leader should initial the record.

i. Remarks. Using the date as a cross reference, enter any remarks in this space which pertain to a pest control operation reported on the record. If a diagram of areas treated is desired, it may be put in this space or put on a separate card and attached to the record.

Camp Roberts Pesticide Usage Reporting Form

PESTICIDE USE SUMMARY - CAL NATIONAL GUARD CAMP ROBERTS

Month Oct-99

APPLICATOR	DATE TIME	SITE	PEST	PRODUCT	MAKER	REG No.	AMT USED unit	ACTIVE INGREDI.	AMT APP unit	RATE	MIX AMT	AMT A.I./LB	LBS A.I.
BUGS BEGONE, INC	10/3/1999 0840	C. RBTS bldg 303	VAR. WEEDS	ROUNDUP PRO	MONSANTO	340-298	1 1/2 qt	GLYPHOSATE	1 1/2 qt	0.75%	50 gals	4 LBS/GAL	1.500
BUGS BEGONE, INC	10/3/1999 0930	C. RBTS bldg 100	YELL STARTHIST	IRONSTAR G	RHONE POULEN	28-353ZA	.125 gal	OXADIAZON	35 lbs	4 lbs/A	N/A	2.0%	0.700
BUGS BEGONE, INC	10/4/99 10-4PM	C. RBTS billets	spiders, roaches	CATALYST AQ.	SANDOZ	29-31 A	2 oz	PROPETAMPHOS	2 oz	0.50%	25 gal	1.08/gal	0.017
												TOTAL	2.22
							Submitted to:	Chris Wilde	Date:	10-Nov-99			LBS

C-2

DD-1532

Form Approved OMB No. 0704-0211

PEST MANAGEMENT REPORT

CS COM | DC | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12

REPORT CONTROL SYMBOL DD-P&L(AR)1532

1. MAJOR OR REVIEWING COMMAND

a. NAME: Gen. U.S. Army 10th

b. ADDRESS: Ft. San Houston, TX

2. REPORTING INSTALLATION

a. NAME: Dept. of the Army

b. ADDRESS

NO	TARGET PEST Name (a)	OPERATION Name (b)	Total Units Treated (c)	Unit (d)	Site (e)	PESTICIDE Name (f)	Form (g)	APPLICATION Amount (h)	APPLICATION Unit (i)	Final Conc. % (j)	RATE (Per Area Used) Lbs. (k)	RATE (Per Area Used) % (l)	SUPPLY SOURCE Enter S, H, O, C (m)	TIME Hours (n)
	13-18	19-19	20-24	25-27	28-30	31-33	34-38	37-41	42-43	44-48	50-55	56-58	68	69-71
1	Roaches	Bedside	10.5	MSF	RS	Combat	STS	10.00	EA	2.01				1.0
2														
3														
4														
5														
6														
7														
8														
9														
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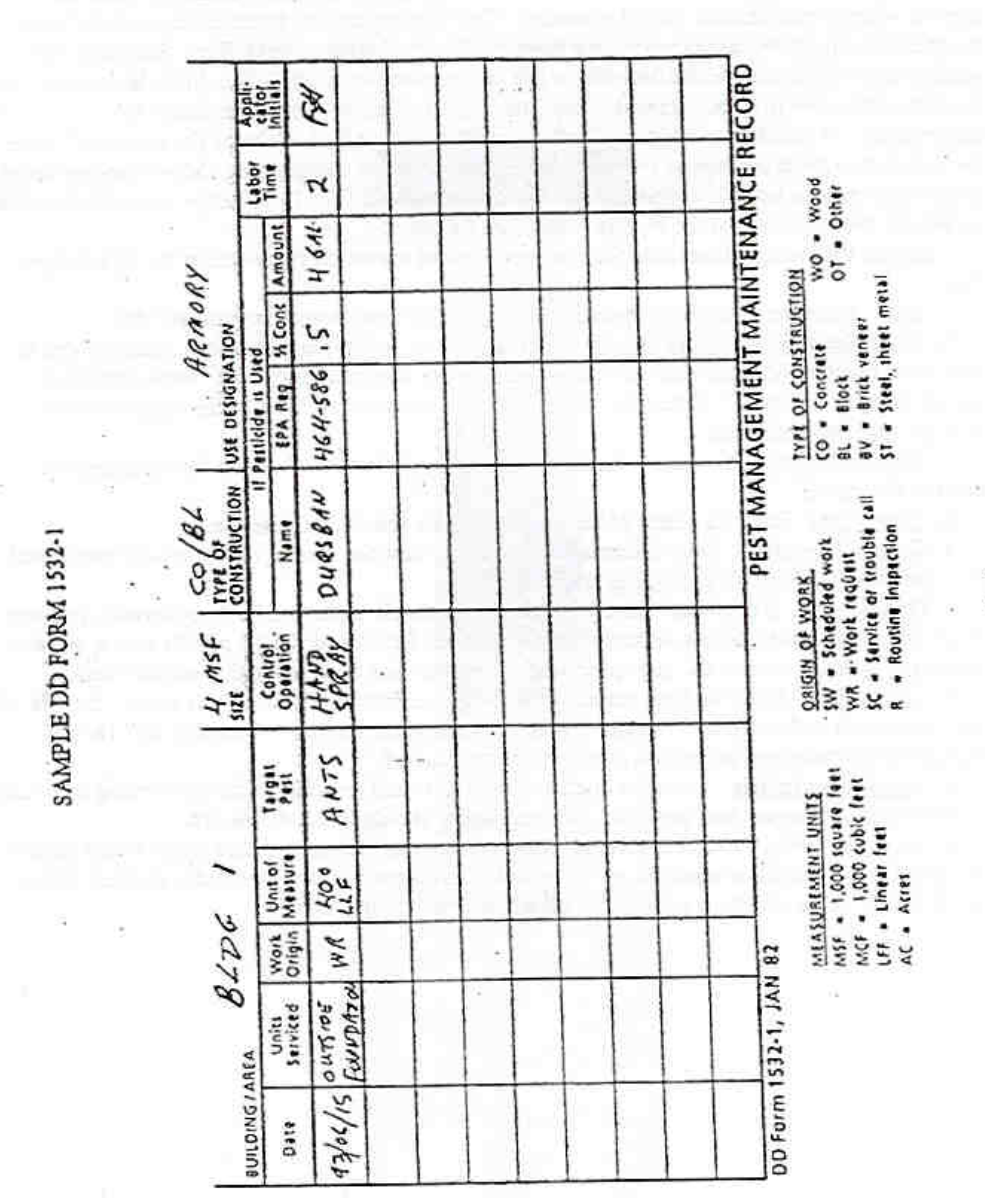
11														
12														
13														
14														
15														
16														
17														

DD FORM 1532, MAY 87 (EF) (PerFORM PRO) PREVIOUS EDITIONS ARE OBSOLETE

C-5

5.32

DD 1532-1



SAMPLE DD FORM 1532-1

BUILDING / AREA: BLDG 1 | SIZE: 4 MSF | TYPE OF CONSTRUCTION: CO/BL | USE DESIGNATION: ARMORY

Date	Units Serviced	Work Origin	Unit of Measure	Target Pest	Control Operation	If Pesticide is Used: Name	EPA Reg.	% Conc.	Amount	Labor Time	Applicator Initials
93/04/15	OUTSIDE FOUNDATION	WR	400 LF	ANTS	HAND SPRAY	DURSBAN	464-586	.5	4 GAL	2	FSH

DD Form 1532-1, JAN 82

PEST MANAGEMENT MAINTENANCE RECORD

MEASUREMENT UNITS
MSF = 1,000 square feet
MCF = 1,000 cubic feet
LFF = Linear feet
AC = Acres

ORIGIN OF WORK
SW = Scheduled work
WR = Work request
SC = Service or trouble call
R = Routine inspection

TYPE OF CONSTRUCTION
CO = Concrete
BL = Block
BV = Brick veneer
ST = Steel, sheet metal
WO = Wood
OT = Other

C-4

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APPENDIX D, SELF-HELP PEST MANAGEMENT

PEST CONTROL MATERIALS SUITABLE FOR ISSUE IN SELF-HELP PROGRAMS

1. The items listed below are considered appropriate for issue as part of self-help pest management programs; the CAARNG Pest Management Consultant in accordance with AR 200-5 must approve nonstandard and State-registered pesticides. The consultant may authorize substitutions when replacement items contain the same or similar active ingredient(s) and the product meets use pattern and target pest requirements. Substitutions and specific recommendations/prohibitions should be made after consultation with the appropriate medical authority.

a. Insecticide, Fipronil, cockroach bait, regular size (Combat Quick Kill)
NSN 6840-01-180-0167. 12 bait stations/box - 12 boxes/package (PG)

b. Insecticide, Fipronil, cockroach bait station, large size (Combat Quick Kill)
NSN 6840-01-224-1269. 8 bait stations/box - 12 boxes/package (PG)

c. Insecticide, Fipronil (Maxforce Ant Bait), NSN 6840-01-298-1122.
96 stations/package (PG)

d. Insecticide, N-ethyl perfluorooctane sulfonamide (Advance Dual Choice),
NSN 6840-01-426-5472. 24 stations/box (BX) [This product is also an ant bait]

e. Insecticide, Hydramethylnon (Amdro Fire Ant Bait), NSN 6840-01-287-3913.
(24) 6-oz bottles/box (BX)

f. Insecticide, D-trans Allethrin and Resmethrin, 0.15% and 0.2%, minimum, respectively, aerosol, NSN 6840-01-067-2137. 11-oz can (CN)

g. Insecticide, Pyrethrin aerosol (PT 565 Plus XLO), NSN 6840-00-823-7849.
(12) 18-oz cans/box (BX)

h. Insecticide, Pyrethrin, allethrin, d-phenothrin, or resmethrin, aerosol (PT 515 Wasp Freeze & Hornet Killer/Wasp Stopper II Plus/Wasp Hornet Killer II)
NSN 6840-00-459-2443. (12) 12-oz cans/box (BX)

i. Insecticide, boric acid, 99.0 percent (ROACH KILL or similar, 10-ounce squeeze bottle), nonstandard; local purchase item.

j. Insect Repellent, personal application, 31.58 percent DEET, NSN 6840-01-284-3982 (3M, EPA 58007-1. (12) 2-ox tubes/box (BX)

k. Insect Repellent, clothing application, aerosol (Permethrin Arthropod Repellent), NSN 6840-

01-278-1336. (12) 6-oz can/box (BX)

l. Trap, roach (Mr. Sticky or equivalent), NSN 3740-01-096-1632.

m. Trap, rodent, glue [Model M-319 (Victor Holdfast) or similar], NSN 3740-01-240-6170.

n. Mouse trap, spring, NSN 3740-00-252-3384.

o. Swatter, fly, NSN 3740-00-252-3383.

p. Indoor Fly Catcher Traps, Part Number 445 or M500, cylindrical sticky trap, NSN 3740-01-412-9363. 12/box (BX)

q. Insect FlyCatcher, Part Number M510, NSN 3740-01-412-9371. 144 sticky paper strip rolls/box (BX)

2. Issue of the following items in self-help programs is prohibited.

a. Insecticide, d-Phenothrin, 2-percent aerosol, 12-ounce can, NSN 6840-01-412-4634.

b. Spring-loaded rat traps.

c. Rodent baits.

d. Herbicides other than “weed and feed” type fertilizers.

3. Many of the products listed are also available under similar nomenclature but with other stock numbers; these other products are often in unwieldy containers that may lead to waste or inappropriate use. Requisitions should be prepared to indicate that substitutions to the item requested are not acceptable.

4. Pesticides issued by self-help programs will be included in the each installation’s pest management reporting system for inclusion in the annual report of pesticide use.

SELF-HELP PEST CONTROL GUIDANCE

Pest problems in facilities often bring about a request for items, which facility managers or unit personnel can use to solve minor infestations. Based on the pests commonly encountered, the facility manager should order and\or stock the items (from the authorized list) that can provide the best control available. Local county extension agents or health departments can often provide information on what species and what time of year certain pests cause problems in facilities within local areas. The following information provides a closer look at the items authorized and also incorporates general trends found when self-help pest control was recently evaluated within the Army.

a. Large Combat® bait station. The large traps are usually used for American or oriental cockroaches. The demand for these items is probably lower due to the relative infrequency of infestations encountered by these larger species of insects, but should be stocked if the larger species of cockroaches are found in your facility.

b. Small Combat® bait station. This size appears to be the more popular of the two sizes authorized. Since the large bait stations contain the same active ingredient as the small stations, the size of the cockroaches infesting quarters should be the determining factor in stocking the traps. Cockroach bait stations appear to be one of the most popular and widely used self-help products in the Army.

c. Ant bait stations. These products are very popular in Army self-help programs overall. Since the two products are interchangeable, either will do the job.

d. Amdro ant bait. This product is designed for fire ant control. These insects are primarily a problem in the southern part of the United States.

e. Aerosol insecticide. Although there is some controversy among entomologists about the use of pyrethroid-type aerosol insecticide, the product is commonly found in Army self-help programs. The arguments made about the dangers of aerosols and the potential to promote cockroach resistance probably do not outweigh the use of this product for control of insects other than cockroaches. Mechanical methods, such as vacuuming, can eliminate pests without the use of chemicals, but the aerosol insecticide allows the customer to immediately control minor pests that may periodically appear in the home.

f. Boric acid. Boric acid is used almost exclusively for cockroach control. Use of all the boric acid products is second only to bait stations for self-help items directed against these insects. Education and training on the use of this product is important. The boric acid should be applied as a thin film of dust, not placed in lumps or piles in the house. If applied correctly, the dust is difficult to see, however, it will effectively kill cockroaches. If the applicator can see a lot of white powder after the application, then too much product has been used.

g. DEET insect repellent. Repellents are usually available to troop units through other supply sources. In fact, military units may be able to obtain repellents through their unit supply instead of self-help. However, since there may be some military personnel who do not have ready access to

this product, the repellent should be stocked based on demand.

h. Permethrin clothing repellent. This repellent, like the DEET may also be readily available to troops. This product should also be offered to provide personal protection to unit personnel who do not have any other source except self-help. These products are especially important where mosquitoes, tick, and chiggers are present.

i. Cockroach sticky trap. The sticky traps are relatively inexpensive and are one of the most popular pest control items issued in self-help programs. They are easy to use, do not contain pesticides, and work for a variety of insects in addition to the cockroaches for which they are marketed.

j. Wasp Freeze. Designed to kill wasps, yellow jackets, and hornets, this aerosol product provides occupants the means to eliminate stinging insects problems themselves. However, people who are afraid of stinging insects often request a professional pest control service to solve the problem. Stock this product upon demand. Consult the local pest control companies or extension agents for advice on the types of stinging insect problems found in your area.

k. Rodent glue board. These glue boards and mouse traps (see next paragraph) are commonly found in self-help programs. Some people like the idea of using a glue trap instead of a mechanical trap for safety reasons. These products work well and are nonchemical in nature.

l. Mouse trap. These traps are found at nearly all self-help programs. Unlike most other pest problems, where the pest controller contractors would often use pesticides not available to facility personnel, professional control of mice is commonly done with traps. By having the unit personnel\facility managers set traps for mice, there is a very observable cost savings by not having a contractor do the same job. Since most mouse infestations are initially limited to one or two mice, usually on a seasonal basis, use of self-help to control mice is an ideal situation.
It should be kept in mind that self-help rodent control usually works well for occasional invading rodents, but is not suitable when large numbers of mice are encountered.

m. Fly sticky tapes. While not a popular item, some self-help programs provide this nonchemical method of fly control. At facilities which may be located near fly breeding sources (farms, feed lots, stables), the fly tapes may be just what is needed to help control flies. The local health department can often provide information about fly problems in your area.

n. Fly swatter. These low-cost devices are more popular than the fly tapes, mentioned above. Although they are called “fly” swatters, they can be used to kill a variety of flying insects and spiders. This item should be available to unit personnel.

o. Weed and feed fertilizer. Since most outdoor work is done through grounds maintenance contracts, use of this item is very limited. Because of the bulky nature and the amount of work involved in application, many facilities do not use this product to either beautify their lawns or to kill weeds. However, this is a local alternative that facility personnel can use without being certified.

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APPENDIX E, PEST MANAGEMENT COORDINATOR'S CHECKLIST

☐ Obtain pest management training in all areas of pest control practiced on facilities supported by the CAARNG.

☐ Use Obtain HAZCOM training.

☐ Base all contracts on this plan.

☐ Use this Plan as a guide to evaluate pest controllers.

☐ Ensure pest controllers operate in accordance with the integrated pest management outlines (Appendix A).

☐ Provide a copy of this plan to all facility managers.

☐ Update the installation Pest Management Plan (PMP) and submit changes yearly to the National Guard Bureau Pest Management Consultant.

☐ Coordinate with Camp/Armory/Facility Managers and contracted pest controllers to ensure all applicable information is recorded and reported as required by this plan.

☐ Monitor the storage and use of pesticides in the self-help pest control program.

☐ Monitor certification of contracted pesticide applicators.

☐ Coordinate with the CAARNG State Surgeon and local health officials to determine the prevalence of disease vectors and other public health pests in the area surrounding the installation.

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APPENDIX F, COORDINATION DOD, OTHER FEDERAL, STATE, AND LOCAL

1. The Army Pest Management Program is responsible for protecting personnel and material from illness and damage by pests, wherever in the world they may be. The program includes both medical and operational responsibilities. While these responsibilities do overlap, Medical Command (MEDCOM) focuses on preventing and minimizing medical consequences of pests and pest management operations while the Assistant Chief of Staff for Installation Management and the Army Environmental Center concentrate on safe, effective implementation of day-to-day pest management operations and environmental considerations of pest management operations. A list of organizations involved with or who have impact on the CAARNG Pest Management Program is found in Appendix G. Their addresses and a description of their responsibilities are also included.

2. The National Guard Bureau Pest Management Consultant provides technical review and approval of the pest management plan, and gives special attention to any pesticide application that: uses restricted use pesticides; uses any pesticide that may significantly contaminate surface or ground water; includes 259 or more hectares (640 acres) in one pesticide application; may adversely affect endangered or other protected species or habitats; or involves aerial application of pesticides.

3. Liaison is maintained between the Pest Management Coordinator, the CAARNG State Surgeon, and personnel at USACHPPM-West to determine the prevalence of disease vectors and other public health pests in the area surrounding the installation.

4. Capture and removal of stray dogs and cats on government property should be coordinated through local animal control agencies.

5. Mosquito surveillance and control requires coordination with the following agencies:

a. *Local Mosquito Control Agencies* (if applicable) - can be requested to conduct surveillance and control if necessary.

b. *County/State Health and Environmental Personnel* - are responsible for monitoring the incidence of mosquito-borne disease and should be consulted on mosquito control and health threat issues. Proposed actions should be coordinated with health officials and environmental personnel.

c. *Bureau of Land Management and U.S. Fish and Wildlife Service* - these services are consulted whenever any proposed action may be detrimental to any endangered or threatened species or sensitive habitats in the area.

6. Control and surveillance of regulated and quarantine pests should be coordinated through the U.S. Department of Agriculture (USDA) and the USDA Forest Service.

7. Facility Engineering personnel coordinate with the Corps of Engineers to assure that pesticide application, such as termite pretreatment for new construction, is properly performed and documented.

8. A list of resources and points of contact available to support the pest management program is also found in Appendix G.

APPENDIX G, CAARNG POINTS OF CONTACT AND RESOURCES AVAILABLE TO SUPPORT THE CAARNG PEST MANAGMENT PROGRAM

POINTS OF CONTACT

CAARNG Headquarters
Sacramento, California
DSN 466 - xxxx
Commercial (916) 854 - xxxx

RESOURCE	PHONE NUMBER
Facilities Management Officer	3539
Deputy Director Environmental	3397
Pest Management Coordinator	6543
Facilities Engineering	3534
State Safety Manager	3163
Safety Office (Federal Employees)	3039
Occupational Health	3163
Director of Logistics	3476
State Contracting Section	3690
State Surgeon	3243

*****See the CAGNET Dialing Information sheet at the end of this appendix for phone prefixes for the Camps, AFRC, and other activities in the CAARNG.

RESOURCES AVAILABLE TO SUPPORT THE PEST MANAGEMENT PROGRAM

MAJOR ORGANIZATIONS

U. S. ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE

The pest management program is responsible for providing technical assistance and support in all aspects of vector borne disease, pesticides, and integrated pest management. CHPPM maintains laboratories and a staff of military and civilian entomologist and technicians for assisting the Army pest management community. CHPPM, Main operates the DoD Pesticide Hotline, produces technical guides, identifies arthropods, provides resistance test kits, and performs resistance testing. Examples of on-site services provided are Pest Management Program Reviews, MEDCOM Pest Management Assistance Visits, Pest Resistance Evaluations, Lyme Disease Risk Assessments, Environmental Compliance Audits, and Pesticide Risk Management Studies. Other services are available by request and are tailored to the needs of the requesting organization.

USACHPPM-West
ATTN: MCHB-AW-ES (Chief, ESD)
Box 339500 – MS 115
Fort Lewis, WA 98433-9500

DSN 347-0084
(253) 966-0084

DOD Pesticide Hotline
(for information concerning federal pesticide information, EPA/state registered pesticides and pesticide labels)

DSN 584-3773
(410) 436-3773
FAX: (410) 436-2037

ARMY MEDICAL DEPARTMENT CENTER AND SCHOOL (AMEDDC&S)

The Medical Zoology Branch of the AMEDDC&S is the Army's designated center for DoD pest management certification training. The school provides training to enlisted, officer, and civilian personnel; is involved in development of educational materials, including videos and graphic aids; and provides technical input to correspondence courses.

Army Medical Department Center and School
Academy of Health Sciences, U.S. Army
ATTN: MCCS-HPM
Fort Sam Houston, TX 78234-6100

DSN 471-5270/4278
(210) 221-5270/4278
FAX: (210) 221-5948

NATIONAL GUARD BUREAU

The National Guard Bureau (NGB) reviews pest management plan, pest control contracts, and self-help pest control use. The NGB Pest Management Consultant provides technical approval of the pest management plan, and gives special attention to any pesticide application that: uses restricted use pesticides; uses any pesticide that may significantly contaminate surface or ground water; includes 259 or more hectares (640 acres) in one pesticide application; may adversely affect endangered or other protected species or habitats; or involves aerial application of pesticides.

NGB Pest Management Consultant
CPT Alison Hyder
Pest Management Consultant
111 South George Mason Drive
Arlington, VA 22204

(703) 607-9952
DSN 327-9952
FAX: 8329

ARMED FORCES PEST MANAGEMENT BOARD (AFPMB)

The mission of the AFPMB is to recommend policy, provide scientific advice, and enhance coordination among the DoD components on all matters related to pest management. The AFPMB approves introduction, stockage, and deletion of pest management material in the DoD supply system; coordinates and develops requirements for pest management related research and testing within DoD; and operates the Defense Pest Management Information Analysis Center (DPMIAC). DPMIAC maintains a military entomology and pest management information database. Scientific information pertinent to the military pest management program is indexed, abstracted, stored, analyzed, disseminated, and retrieved on request.

Armed Forces Pest Management Board
Forest Glen Section
Walter Reed Army Medical Center
Washington, DC 20307-5001

DSN 295-7476
(301) 295-7476

DPMIAC (301) 295-7479; DSN 295; FAX: 7483

DEPARTMENT OF THE ARMY (DA)

The conservation division of the Director of Environmental Programs is responsible for developing Army policies, standards, and procedures relative to pest management programs, operations, pesticides, and related issues. Performs reviews to assure adherence to policies and provide technical advice as appropriate. Represents Army installations on the AFPMB, and with other government agencies. Establishes Army program requirements relative to Research and Development; interacts with other DA programs and disciplines.

Headquarters, Department of the Army
Assistant Chief of Staff for Installation Management

DSN 329-1958
(703) 601-1958

Directorate of Environmental Programs, Conservation Division
ATTN: DAIM-EDT (Pest Mgmt)
600 Army Pentagon
Washington, DC 20310-0600

THE ARMY ENVIRONMENTAL CENTER

The AEC is responsible for managing the Army Pest Management Program. This includes approving Installation Pest Management Plans, certification of pest controllers, and managing special projects.

AEC Pest Management Team DSN 584-1568
Ms. Sandra Alvey (410) 436-1568
Army Environmental Center (AEC) FAX (410) 436-1680
Environmental Media Manager - Pest Management
ATTN: SFIM-AEC-ECN, Bldg E4435
Aberdeen Proving Ground, MD 21010-5401

WALTER REED ARMY INSTITUTE OF RESEARCH (WRAIR)

The Department of Entomology, WRAIR, implements an extensive program of basic and applied research on vectors of arthropod-borne diseases of military significance. Major areas of emphasis include: 1) design and evaluation of improved methods of biosystematics to include vector genetics, molecular taxonomy, and development and production of computerized interactive taxonomic keys for use by far-forward deployed preventive medicine personnel; 2) selection and development of rapid assays for detection and identification of parasites in vectors; 3) identification of arthropods responsible for transmission of infectious diseases and maintenance of reference insect collections of important vectors; 4) investigation of parasite vector host interactions and risk factors for prediction and disruption of natural transmission cycles; 5) culturing of malaria and *Leishmania* parasites and development of animal models to support vaccine development and diagnostics studies; 6) investigation of repellent mechanisms and optimization, composition, formulation and delivery of candidate repellents; 7) preparation of field sites for vaccine, drug, and repellent testing, and 8) design and evaluation of integrated vector control measures for preventing diseases.

Walter Reed Army Institute of Research DSN 291-3719
Department of Entomology (202) 782-3719
Building 40, Room 1089
Washington, DC 20307-5100

FUNCTIONAL RESOURCES

The resources listed below are designed to help you obtain pest management or related information to aid in your understanding your pest management program. While this listing is not all-inclusive, it represents those agencies most commonly used when answers to pest management questions cannot be answered at the installation level.

Aerial Application of Pesticides

US Air Force Reserve, 910 AW/DOS - 3976 King Grave Road, YNG-WRN RGL ARPT, ARS, Vienna, OH 44473-0910, (216) 392-1178/1111, DSN Prefix: 346; Fax: (216) 392-1156/1161

Chemical Emergencies

a. For assistance in a chemical emergency involving a spill, leak, or exposure call: CHEMTREC; Emergency: 1-800-424-9300 (Non-Emergency: 1-800-424-9300)

b. National Response Center for Pollution, Toxic Chemical & Oil Spills: 1-800-424-8802

c. National Pesticides Telecommunications Network: Up-to-date technical reference material on toxicity, human and environmental health effects, disposal, and proper use of each pesticide. 1-800-858-7378

Disease Threats Due to Arthropods

a. CDC - Division of Vector-Borne Infectious Diseases, PO Box 2087, Fort Collins Colorado 80522-2087, Tel: (303) 221-6452/6477

b. State Mosquito Control - Look in the "State Government" section of your telephone book (Blue Pages). Often found under "Agriculture Department," "Environmental Department," or "Health Department," or sometimes "Sanitation Department."

c. State, County Health Departments - Look under "Health Department' in the State, County Government pages of your telephone book (Blue Pages).

d. USACHPPM-West, Box 339500 – MS 115, Fort Lewis, WA 98433-9500, Tel: (253) 966-0084, DSN Prefix 347.

Environmental Issues, Pesticides and Pest Management

a. CPT Alison Hyder, Pest Management Consultant, 111 South George Mason Drive, Arlington, VA 222009-1382, Tel (703) 607-7989; DSN 327-7989; FAX: 7993.

b. EPA, Office of Pesticide Programs, 401 M. Street, S.W., Washington, D.C. 20460, Insecticide-Rodenticide Branch, Tel (703) 305-5300; Fungicide-Herbicide Branch, Tel (703) 305-6250.

Forest Pest Management

USDA Forest Service, 180 Canfield Street, Morgantown, WV 26505, (304) 285-1547

Hazard Communication

OSHA, Office of Information and Consumer Affairs, Tel: (202) 219-8151

Literature, Pest Management

a. Armed Forces Pest Management Board, Defense Pest Management Information Analysis Center (DPMIAC), Tel: (301) 295-7476, DSN Prefix: 295, Fax: DSN 295-7473

b. Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, Tel: (202) 783-3238, FAX: (202) 512-2233

Least Toxic Methods, Pest Management

Bio-Integral Resource Center (BIRC), PO Box 7414, Berkeley, CA, 94707, Tel: (510) 524-2567

Occupational Health and Safety - Pest Management

a. USACHPPM: Directorate of Occupational Health Sciences (410) 436-3613 or DSN 584-3613

b. EPA Occupational Safety Branch: (703) 305-7666

Policy, DoD Pest Management

a. Ms. Sandra Alvey, Army Environmental Center (AEC), Environmental Media Manager - Pest Management, ATTN: SFIM-AEC-ECA, Bldg E4435, Aberdeen Proving Ground, MD 21010-5401, DSN 584-1565, Commercial (410) 436-1565, FAX (410) 436-1680.

b. Armed Forces Pest Management Board, Forest Glen Section, Walter Reed Army Medical Center, Washington, D.C. 20307-5001, (301) 295-7476, DSN Prefix: 295, Fax: (301) 295-7473.

Pest Identification

a. USACHPPM-West, Box 339500 – MS 115, Fort Lewis, WA 98433-9500, Tel: (253) 966-0084, DSN Prefix 347.

b. Extension Service - Look in the “County Government” section of your telephone book (Blue Pages) usually under “Extension Service” or “Agricultural Extension Service.”

Pesticide Information/Advice

a. CHPPM Pesticide Hotline; (410) 436-3773, DSN Prefix: 584, Fax (410) 436-2037

b. USACHPPM-West, Box 339500 – MS 115, Fort Lewis, WA 98433-9500, Tel: (253) 966-0084, DSN Prefix 347.

Pesticide Poisoning:

a. Poison Control Center, Local; Look on page one of your telephone book.

b. Animal Poisonings: call your State Veterinarian (this point of contact can usually be obtained by calling the State Health Department).

Regulatory Requirements, Pesticides

a. California State Pesticide Coordinator	916-752-7011 Fax: 916-752-3394
b. CHPPM Pesticide Hotline:	(410) 436-3773 DSN 584-3773 Fax (410) 436-2037

Training, Pest Management

a. Army Sponsored Courses - Academy of Health Sciences, ATTN MCCS-HPM, Fort Sam Houston, TX 78234-6100, Tel: (210) 221-6801, DSN Prefix 471.

b. Air Force Sponsored Courses - Programs Division, 2AF/DOP, Keesler AFB, MS 39534-5000, DSN: 597-1336. Also, USAF Formal School, 366 TS/TSIM, Training Squadron, 727 Missile Road, Sheppard AFB, TX 76311-2254, DSN 736-5226, DSN Fax: 736-3345.

c. Navy Sponsored Courses - NDVECC, Naval Air Station Jacksonville, Box 43, Jacksonville, FL 32212. (904) 542-2424, Fax: (904) 779-0107.

d. State Pesticide Regulators Workshops - Look in the "State Government" section of your local area telephone book for the Pesticide Regulation Office, usually under "Department of Agriculture" or "Consumer/Regulatory Affairs" or "Environmental Office."

e. Extension Service - Look in the "County Government" section of your telephone book (Blue Pages) usually under "Extension Service" or "Agricultural Extension Service."

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PLAGUE CONTINGENCY PLAN FOR CAMP ROBERTS, CALIFORNIA

TABLE OF CONTENTS

EXCUTIVE SUMMARY

Camp Roberts, California is owned by the U.S. Government under the direction of the District Engineer, Sacramento District, Army Corps of Engineers. The California Army National Guard Army Reserve, Army National Guard, and active Army units train at Camp Roberts operate the installation. The installation, located in the Salinas River Valley of the California Coast Range. includes 42.539 acres in San Luis Obispo and Monterey Counties. This plan describes the potential for plague, it's impact on the installation, and measures necessary to detect and control plague.

RESPONSIBILITIES

1. Installation Commander.

a. Designate a Plague Coordinator for all activities dealing with plague on the installation.

b. Approve and support the Plague Contingency Plan.

2. **Director of Facilities Engineering**.

a. Provide personnel, equipment and materials to control fleas in California ground squirrel burrows as necessary.

b. Ensure that all rodent control operations designed to minimize plague risk are conducted safely and have minimal impact on the environment

3. Plague Coordinator.

a. Coordinate with activities conducting plague surveillance and control procedures on the installation.

b. Maintain liaison with Stale and local public health officials to monitor plague activity in the communities and areas surrounding Camp Roberts.

4. Installation Medical Authority - California Medical Detachment.

a. Conduct plague surveillance to predict and detect plague epizootics.

b. Maintain liaison with county and State public health personnel to determine if plague is present in the area surrounding Camp Roberts.

c. Provide education/information concerning plague to Camp Roberts personnel and troops training on the installation.

d. Conduct plague epizootic investigations at Camp Roberts.

5. U.S. Center for Health Promotion and Preventive Medicine-West.

a. Conduct plague epizootic investigation at Camp Roberts upon request

b. Provide insect and rodent identification services.

PLAGUE THREAT ON CAMP ROBERTS

1. In the western United States, plague can infect a wide variety of wild and domestic animals, although some species are much more susceptible than others. Plague is believed to circulate in populations of small rodents such as mice, rats, and chipmunks, but causes little mortality. Known, probable, and susceptible primary maintenance hosts of plague include rodent species that have the following characteristics:

a. Moderately high resistance to the plague bacillus, *Yersinia* pestis.

b. A broad response to Infection with *Y. pestis* within a population.

c. Rodents with a high reproductive potential and a long multi-estrous birthing season with successive multiple litters.

d. Short natural life expectancy and a high replacement rate of individuals in a population.

2. In some areas of California, populations of more susceptible mammals (e.g., California ground squirrels) are occasionally infected with plague. These rodents generally live in colonies covering large areas of land. When there is a plague outbreak in these rodent populations, the potential for humans to contract plague by exposure to infected mammals and fleas is neatly increased. Plague-susceptible rodents axe called “amplifying hosts” because they enable the disease to spread rapidly and are highly infective.

3. No plague epizootics among California ground squirrels have been reported on Camp Roberts in the past 20 years. Surveys of captured carnivores and observations of ground squirrels have shown one plague positive bobcat and several plague positive ground squirrels. No human plague cases have been reported on the installation.

4. Potential exposure to plague on Camp Roberts can be characterized by three general scenarios:

a. Feral cats which run free and live in the cantonment area bring plague infected rodents or their fleas into troop billeting and administrative area Cats can also develop plague and subsequently transmit the disease through bites, scratches, etc.

b. People using recreation areas come into contact with plague infected sick or dead rodents or plague injected fleas from rodent burrows. Hunters and trappers are included in this category, but they often face additional plague exposure during the handling and skinning of infected

c. Troops use field training/bivouac sites that have colonies of plague-infected rodents. An additional threat in these types of areas is when plague has killed the rodents and left live, plague infected fleas in the burrows.

5. The consequences of plague on the installation may include:

a. Human illness and/or death from plague - this not only causes anguish and concern among victims and relatives, but may also be politically sensitive

b. Illness or death of pets or other desirable animals.

c. Lost use of training/bivouac sites - this is particularly serious since most plague outbreaks occur during the summer months when field training is intensified.

d. Lost use of recreation areas - this can also be serious since increased use of these areas and plague outbreaks usually both occur during the summer months

e. Large expenditures of money, manpower and equipment to reduce or eliminate exposure following a plague outbreak.

6. Plague is a dynamic disease and has any variables which include a wide variety of animal hosts/reservoirs; numerous flea species with varying abilities to become infected with and to transmit the plague bacillus; geographic differences in relationships between rodents, fleas, and habitats; and various rodent hosts with different infection rates to the plague bacillus. For these reasons there is no one strategy for the prevention and control of plague that will work at all locations. However, the following principles should be adhered to:

a. Surveillance of plague susceptible rodent populations and rodent predators.

b. Control of feral cats.

c. Reduction of human exposure to susceptible rodents and their fleas.

d. Public education and awareness about plague.

GENERAL PLAGUE INFORMATION

THE DISEASE:

1. Plague is caused by a bacterium, Yersinia pestis, and in humans this disease is expressed in three clinical forms: bubonic, septicemic, or pneumonic plague. The term bubonic plague describes the invasion of the lymph system by plague bacteria Infection can result from an infected fleabite. The lymph node, which drains the infected site, eventually becomes infected, and swelling and necrosis occur. The swollen lymph node, which may grow to the size of an orange, is called a bubo, hence the term bubonic plague. The incubation period is usually 2-6 days, but may be shorter (as little as 36 hours) or longer (up to today's). The symptoms ale usually abrupt, with high fever, chills, headache, rapid heart beat, mental and physical exhaustion, and a very tender bubo. -

2. Septicemic plague occurs when the bacteria spread from the lymph system into the blood system The liver and spleen attempt to filter out the bacteria from the blood, but the bacteria multiply so fast that these organs are unable to efficiently filter out the bacteria Consequently, the bacteria then invade the blood system with the bacterial antigens acting as toxins in the blood. The central nervous system and other lymph nodes may also become involved The symptoms occur suddenly and include lethargy, mental confusion, agitation, collapse of peripheral capillaries, and possibly severe seizures, shock, delirium, and coma.

3. Pneumonic plague may be either a secondary infection from the bubonic form or **a** primary - infection from the inhalation of infective droplets from another individual with pneumonic Plague. The incubation period is usually 3-4 days. Symptoms are somewhat similar to severe Pneumonia and include lung congestion, difficulty in breathing, high fever, pain in the chest, and
a cough with frothing bloody sputum containing plague bacteria.

4. When untreated, bubonic plague has a fatality rate between 25-60 percent. Septicemic and pneumonic plague is usually fatal if untreated (95-98 percent). If treatment is started within the first 15 to 24 hours after onset of symptoms, the prognosis is good even with Septicemic and pneumonic plague. Unfortunately, incorrect diagnosis often results in inappropriate or delayed treatment, which may result in the death of the patient

5. A vaccine of killed plague bacteria offers some protection but only for a few months. This vaccine requires frequent boosters and therefore is not practical for the general population Immunity after recovery from plague is only temporary. Them should be no need for plague immunizations an Camp Roberts unless plague causes ground squirrel die offs or evidence of -high plague antibody is found in carnivores on the installation- In the event ague poses a health threat on the installation, medical personnel from California Medical Detachment, located at the Presidio of Monterey, will determine the categories of personnel to be immunized against the disease.

THE DISEASE CYCLE

The transfer of plague bacteria from one host to another enables the disease to multiply and spread. In areas where the bacteria, vectors, and reservoir hosts form an ecological association, the disease can circulate for indefinite periods. The epidemiology of plague typically involves a human, domestic, and a sylvatic cycle (see Figure 1). Recognition of the various vectors and reservoir hosts within each cycle is the most important step in controlling the disease.

MODES OF TRANSMISSION

1 . There are various means by which plague can be transmitted. The most common form of infection is by the bite of infected fleas. Fleas can become infected by feeding on animals that have plague bacteria in their blood when a flea becomes infected, the bacteria multiply in the proventriculus (crop) and stomach of the flea- As the bacteria multiply, a jelly-like mass of plague bacteria will form a plug in the crop that prevents blood from entering the stomach. When this happens, the flea is considered 'blocked" and the blood, which cannot pass beyond the block, becomes contaminated with plague bacteria. The contaminated blood is regurgitated into the host when the flea attempts to feed. The "blocked fleas" live for variable periods of time during which they remain hungry and attempt to feed. Experiments have shown very few unblocked infected fleas transmit plague.

2. Live plague bacteria may also be found in flea feces. The bacteria can survive for weeks in dry flea feces. Plague infection could result from scratching infected feces into a fleabite wound. Crushing fleas with the teeth can also infect the lining of the mouth

3. During the winter months, most human plague cases arc the result of direct contact with infected by hunters, usually rabbit-hunters. Infected blood or other body fluids can enter through wounds on the victim's skin; infected sputum can enter through the bite of an infected mammal; or eating infected animal tissue can infect the lining of the mouth.

4. Plague pneumonia is the most dangerous form of plague because droplets spread the bacteria when an infected person or animal (e.g. feral cat) coughs. One person with pneumonic plague can infect many people over a wide area. The inhalation of the plague bacillus will cause primary pneumonic plague in the victim; this newly infected victim can in turn infect many other people.

FLEAS

1. Flea species differ greatly in their importance as vectors of plague. The ability of a flea species to transmit the bacteria to a host is one factor that determines the species importance. There are also a number of ecological factors such as population densities, longevity, host specificity, physical parameters, feeding preference for plague reservoirs, habits, and movements that must be considered.

2. *Oropsylla (Dianiana) montana* (formerly ~own as *Diwnanusa montanus)* and *Efoplopsylius anomalus* are the most common fleas on California ground squirrels and are important vectors of sylvatic plague. *They* are very abundant, efficient vectors, and readily feed on man. The ground squirrels are the primary hosts and are highly susceptible to plague and are often found in close association with humans. Although same flea species are better vectors of plague than others, all flea species should be suspected as possible vectors.

HOSTS

1. The various mammal species respond differently to plague infection, and may have different roles in plague epizootics and human infection. Some species, including several kangaroo rats, and most carnivores, are resistant to plague. These animals may, however, mechanically transmit plague-infected fleas. For example, domestic dogs may transport infected fleas from the wild into the home. All rodents should be considered possible hosts of plague.

2. Some mammals, such as deer mice and field mice and Belding and Townsend ground squirrels, are partially resistant to plague infection. These species may serve as plague reservoirs.

3. Some mammal species are susceptible to plague, but ale rarely infected. However, once these mammals are infected, they may serve as occasional sources of human infection. The infection in these mammals probably originates with plague epizootics in other rodents. For example, chipmunks may become infected and transmit the disease, via fleas or direct contact, to campers. Cottontail rabbits are not known to be reservoirs of plague or to have epizootics. However, a number of human cases of plague every year are associated with the handling, skinning, or eating plague-infected rabbits, or possibly from being bitten by their fleas. Domestic and feral cats often react severely to plague infections. Humans can acquire the disease by contact with infected cats either by fluids from lesions, oral and respiratory infections, or from fleas.

4. Other rodent species are highly susceptible to plague. The disease has killed entire colonies of California ground squirrels. These rodents are often dead-end hosts of plague, but may serve as reservoirs if the squirrel population's ale widespread or theft fleas abundant Ground squirrels often transmit plague to humans either by direct contact or by their fleas. Infected, hungry fleas can often be found around dead rodents and their burrows.

PLAGUE SURVEILLANCE

Plague surveillance is an important aspect of plague prevention and control. The presence or increased activity of plague in rodent populations often is not discovered until a human case occurs. Often, a diagnosis of human plague is not considered until after the patient recovers or dies. A good surveillance program will detect and give early warning of plague activity and warn physicians of its presence so that adequate preparation can be made to deal with the disease before it becomes a severe human threat. Surveillance can also provide information that may give insight into the maintenance and transmission cycles of the disease. There are five major elements in the Camp

Roberts plague surveillance program: rodent and flea characterization, rodent population observation, liaison, carnivore blood serum collection and analysis, and epizootic investigation.

RODENT AND FLEA CHARACTERIZATION

This program element provides baseline data on the rodent and flea species on Camp Roberts, their distribution, relative population densities, host-parasite relationships, and seasonality. This information can be used to determine areas of potential plague epizootics and the potential for human involvement The results also provide reference data to evaluate population changes that may indicate the occurrence of a plague epizootic. Such information would be valuable in an epizootic investigation or control program. The U.S. Center has performed a rodent and flea characterization for Health Promotion and Preventive Medicine-West Table 1 lists rodents captured on Camp Roberts and their associated fleas.

RODENT POPULATION OBSERVATION

This program element involves semi-monthly monitoring of highly plague susceptible rodent colonies (California ground squirrels). The colonies are monitored by looking for unusual conditions such as sick, sluggish or dead animals; presence of carrion feeding flies; or bad odors or vacant burrows that may signal plague activity. Rodent colony monitoring is initiated at the first sign of seasonal rodent activity and is discontinued when the colonies are dormant

LIAISON

This program element directs the Camp Roberts Plague Coordinator to periodically contact local and State health authorities. This keeps the installation aware of the current and historical activity of plague in surrounding areas. If plague activity is discovered or shows an increase in nearby areas, surveillance or preventive measures can be initiated or increased on the installation. Results of surveillance on Camp Roberts are also very useful to civilian health authorities.

CARNIVORE BLOOD SERUM COLLECTION

1. This program element helps to identify the level of plague activity and its general location. During a plague epidemic, carnivores eat dead and dying rodents. The carnivores may then become infected either by rodent fleas or by direct contact with rodent tissue. Carnivores do not usually die from plague, but do produce plague antibodies that are detectable by serological techniques. Testing the serum from one carnivore may be thought of as equivalent to sampling several hundred rodents over a wide area High antibody levels and a high proportion of serologically positive carnivore sera may indicate more recent and widespread plague activity. A moderately large percentage (25-30 percent) of positive sera with relatively high titers (1:256 or greater) should be cause for concern.

2. Sera should be collected by trapping and bleeding 15-20 carnivores from February through April each year on the installation. Guidance and materials to collect carnivore blood samples will be

provided by the California Medical Detachment Blood sera blood impregnated paper samples am sent to the Cents for Disease Prevention and Control (CDC), located in Fort Collins, Colorado, for disposition**.**

EPIZOOTIC INVESTIGATION

Data from colony inspections, carnivore serologies, or liaison may indicate the need for this element of the Camp Roberts surveillance program. Such an investigation should include, as a minimum, the collection of dead animals; trapping rodents for tissue, sera or flea collections; and swabbing burrows for fleas. Samples should be sent to the CDC, Fort Collins, Colorado, for plague isolation. This information, along with the baseline data that was obtained in the rodent and flea characterization element, would be used to verify the presence of plague, to determine the geographical extent of the disease, the major habitats involved, the rodent and flea species involved, and the degree of potential human contact The results would determine what preventive measures should be initiated. An epizootic investigation, if required, would be performed by the California Medical Detachment in coordination with the U.S. Army Center for Health Promotion and Preventive Medicine-West

FLEA CONTROL PROCEDURES

1. Flea control will be initiated upon detection of plague in a California ground squirrel colony or in an area where a plague epizootic has been reported. The material below presumes that rodents that carry the fleas are present (or have recently died).

2. The predominant method by which military personnel may acquire plague is through the bite of infected fleas. The greatest potential for fleabites occurs near California ground squirrel burrows. Plague infected fleas found on live rodents generally stay on the animals and pose little threat unless the rodents are handled (healthy rodents normally avoid humans; however sick rodents may permit close contact). When plague infected rodents die, the infected fleas jump onto warm-blooded animals, including man, which pass by.

3. California ground squirrel fleas should be controlled where plague has been found. Dusting all burrows in the area with an insecticide controls California ground squirrel fleas. Another approach to flea control is the use of insecticide treated bait boxes or tubes. Bait (i.e.. oatmeal) is placed in the center of the bait box or tube with appropriate amounts of insecticide dust in each end. Rodents must pass over an insecticide to reach the bait. The dust slicks to the rodents fur and is transported back to the burrow. The stations are placed at 100-foot intervals. Commercially available, weather-resistant cardboard stations or 4-inch diameter, 30-inch long plastic cylinders may be used as bait stations. This latter method is used to apply insecticide to rodents in small foci or in areas where burrow dusting is impractical (rough terrain, burrows hard to find, etc.).

4. Insecticide dusts may be used for burrow flea control. Permethrin dust appears to give quick knockdown of fleas in burrows following application. This material, applied at ante of 1-2 ounces

per burrow, may provide flea control for up to 8-10 weeks after application. The following insecticide dusts: carbaryl, chlorpyrifos, propoxur, bendiocarb, and diazinon are also effective in reducing flea populations; however, this type of application (burrow dusting) may not be listed on the labels. In addition, some of these pesticides may not be permitted for use on Camp Roberts because of danger to the San Joaquin Kit Fox. These chemicals should be applied in accordance with label directions or at a rate of 2 ounces per burrow or 2 ounces per bait station if no label guidelines are available. A local use exemption may be required before any of the dusts mentioned above can be use*j Selection and use of insecticide dusts should be coordinated with Camp Roberts Environmental Office, the local County Agricultural Commissioner Office, and the California Department of Health Services.

5. Flea surveys should be performed 1-7 days before and 2-7 days after insecticide application to determine insecticide effectiveness. Surveys are done on California ground squirrel burrows when controlling fleas from these rodents. A burrow flea index (average number of fleas per burrow) of 0.3 or less indicates effective flea control. Surveys may also be done on captured California ground squirrels. A squirrel flea index (average number of fleas per squirrel) of 1.0 or less indicates effective flea control. Areas should be retreated if flea control has not been effective.

6. To determine burrow flea index, swab fifty random burrows in each treatment area for fleas. Burrows are swabbed by attaching a 1-square foot piece of flannel cloth (fuzzy side out) to the end of a 10-foot flexible cable (plumber's snake). The cloth is inserted at least 2 feet into the burrow without excessively forcing or twisting the cable. The cloth is then slowly removed from the burrow, placed in a plastic bag and then removed from the cable. Sealed bags are later frozen for 1 hour and fleas counted.

7. To determine the squirrel flea index, live Sap 20-30 California ground squirrels per area. Kill trapped rodents by placing them in a sealed container (i.e., plastic bag, gallon jar. or box) containing an anesthetic or carbon dioxide. Brush fleas remaining on the squirrel into a white enamel pan with a stiff toothbrush. Count the fleas remaining in the sealed container and those brushed off the squirrel. Bury dead squirrels 18-24 inches below the ground surface or dispose in such a way (i.e.. incineration) that they will not be fed upon by pets or wild carnivores.

8. All rodent control programs in plague enzootic areas should be preceded by flea control If not, large numbers of infected fleas will be seeking new hosts, and the potential for human infection will be increased. An alternative to flea control is to declare the area off-limits until the numbers of live fleas are reduced to levels indicated in paragraph 5 above. Since fleas remain alive for long periods of time in rodent burrows, it may be months before humans could use the land.

9. Personnel that are involved in flea control or flea surveys should take precautions to avoid infection. They should wear boots; gloves, long sleeved shirts and bloused pants, and apply insect repellent

PLAGUE EDUCATION

1. When plague is suspected or known to be in areas of human activity, installation personnel will be informed of the hazards of plague and the methods of avoiding it.

2. Plague education programs will be directed towards individuals or groups who may have contact with wild rodents or are active outdoors because of their work or recitation. Medical personnel will also be notified when plague has been found in the area, and they should be familiar with the disease, clinical diagnosis and treatment of plague

3. The public can be informed by newspaper articles, information pamphlets, posters, and talks. Information will include the manner of plague transmission, the importance of avoiding sick or dead rodents and their burrows, the protection of pets from fleas with flea powder or collars, and the importance of seeing a physician if illness develops within a week of exposure. The public will also be asked to report unusual die-offs in rodent populations or rodent activity that might suggest the rodents are sick.

4. Figures 2 and 3 are plague-warning signs written in English and Spanish respectively. These signs will be posted in areas where plague is suspected or identified.

Table 1. List of Mammal and Flea Species Collected at Camp Roberts from 1977 to 1980}*.

Species Name/Common Name	Flea Species
Microtus californicus	*Atyphioceras multidentatus"*
California vole	*Echithwphaga gcilbzacea***
	*Molaraeus telchinus***
Neotoma fuscipes	*Aiyphloceras mzdtidentatus"*
Duskyfoot wood rat	*Euhoplopsyiha glacialis*
	Orchopeas sexuiniatus
Peromyscus californicus	*Malaraeus tekhinus*
California mouse	*Peromyscus boylii*
	*Malaraeus teichinus***
Brush mouse	*Aetheca wagneri*
	Peromyscus maniculatus
	*Anomiopsyllus falskaiifornkus***
Deer mouse	*Malaratus teichinus***
	Aetheca wagneri
-	*Orchopeas serdentatus***
Peromyscus lruei -	*Malaraeus telchinus***
Pinon mouse	*Aetheca Wagneri*

Reithrodontomys megalotis	No fleas collected
Western harvest mouse	
Spermophilus beecheyl	*Oropsytla (Diaznana) montana***
California ground squirrel	*Echidnophaga galiinacea***
	*Hopiopsyllusano,nalus***
Sylvilagus audoboni	*Cediopsylla mat quails*
Desert cottontail	*Euhoplopsyllus glacialis*
Sylvilagus bachmani	*Euhopiop.rylhcs gin cia/is*
Brush rabbit	

Taken from Letter, HSE-MW, U.S. Army Environmental Hygiene Agency, Regional Division-West, 22 May 1980, subject Plague Surveillance Study No. 16-66-0555-80, Rodent and Flea Surveys, Camp Roberts, California, August 1977 March 1980.

Flea species, which can be naturally infected with plague.

CALIFORNIA PLAGUE REPORT, 1998

Compiled by Chartes FR. Smith, James R. Tucker, Ken Townzen
Charles M. Meyers, and Curtis L. Fritz
Vector-Borne Disease Section
California Department of Health Services

Summary. This is the final California plague report for 1998. For the period January through December 1998, plague was detected in 18 of 37 California counties 'sampled through the California Department of Health Services (CDHS) cooperative plague surveillance program. One human case was confirmed in August from Mono County. Plague positive animals tested through the program included 41 coyotes, 2 bobcats, 7 black bears, 2 mountain lions, 3 raccoons, 3 domestic cats, 24 California ground squirrels, 2 golden-mantled ground squirrels, 6 chipmunks (3 species), and 1 Deer mouse. Results are summarized in Table I and Figure 1.

HUMAN PLAGUE

Plague was confirmed in one human patient in California during 1998. The case—patient was a 46 year-old American Indian male resident of Mono County who presented to a local emergency clinic

on July 31 with a one-day history of fever, confusion, and lethargy. At presentation the patient was febrile (104.8 °F) and complained of tenderness in the left inguinal region, although no palpable lymphadenopathy was noted. The patient exhibited no respiratory symptoms and thoracic radiographs were normal On August 2, organisms presumptively identified by a commercial identification system as *Yersinia pestis* were recovered from blood culture. This isolate was later confirmed as *Y. pestis* at the CDHS Microbial Diseases Laboratory by fluorescent antibody phage, and biochemical tests. The patient's initial empirical antibiotic regimen was changed to gentamicin and doxycycline following confirmation of culture results. He responded well and fully recovered.

The case-patient lived and worked in rural areas of both Mono and lnyo counties. Significant exposure history in the ten days preceding the patient's onset of illness included road crew work in the Tioga Pass area, an overnight stay at a rustic residence in that area, and overnight stays at a residence in Bishop, and at the family compound at

Horseshoe Meadows near Mono Lake. In addition, he visited a park in Bishop and went fishing at mountain lakes in Mono County. The lnyo and Mono County Health Departments conducted visual surveys and posted plague warnings at putative exposure sites, provided plague information to the general public through a press release and to the medical community through a physician's advisory.

In cooperation with local health agencies, the CDHS Vector-Some Disease Section conducted an environmental investigation of the case-patients putative exposure sites on August 18-20. Extensive populations of California ground squirrels and chipmunks were found in the vicinity of the family residences at Horseshoe Meadows near Mono Lake, and at a dumpsite near Trumble Lake that the patient had frequented. A population of golden-mantled ground squirrels and chipmunks was present at the Trumble Lake recreation site, Toiyabe National Forest, where the patient had fished and hiked.

Serological sampling and testing of rodents from these sites demonstrated evidence of exposure to *Y. pestis* (titer 1 :128) in 7 of 10 ground squirrels at the site at Horseshoe Meadow, 1 of 3 chipmunks from the dump site near Trumble Lake, and 1 of 5 chipmunks from the Trumble Lake recreation site. Nine ground squirrels from Trumble Lake were serologically negative.

Even though serological evidence of plague was present at three sites associated with this case the Horseshoe Meadows location appeared to be the most likely site of exposure, based on the substantial numbers of ground squirrels present, the presence of known vector fleas, and 70 percent seropositivity among the ground squirrels sampled. Positive antibody among chipmunks and wild carnivores in the region from Lee Vining to Tioga Pass, however, substantiated the belief that a widespread infection existed among the rodent population in the western Mono Basin in 1998. flea suppression measures were implemented at the Mono Lake site and at the nearby dumpsite.

ANIMAL PLAGUE

Plague *was* confirmed in three domestic cats in California during 1998: one in May from Bumey, Shasta County, one in September from Truckee, Nevada County, and the third in October from

Graeagle, Plumas County. All three cats presented to local veterinarians with symptoms compatible with plague. M three were confirmed by bacteriological or serological tests conducted through the CDHS cooperative plague surveillance program. Local health departments in the jurisdiction of each infected cat issued press releases alerting the public to the risk of exposure to plague from infected cats. Cat owners and veterinary staff in each situation were notified of the diagnosis of plague, interviewed about possible exposure contact, and advised of the possible need for antibiotic prophylaxis. -

Serologic evidence of exposure to *Y pestis* was detected among wild rodents in seven counties — Mono, Nevada, Placer, Riverside. San Bernardino, San Diego, and Ventura. In each county, detection of seropositive rodents triggered investigations by health authorities that included posting warnings in affected areas to alert and educate the public of the potential risk, flea and/or rodent control was conducted at heavily used recreational sites in San Bernardino, San Diego and Los Angeles counties.

Serologic sampling of wild carnivores provided evidence of enzootic plague activity among rodent populations in the following regions of California in 1998: South Lake Tahoe (El Dorado County), the San Emigdio and Tehachapi mountains (Kern & Ventura counties), the Modoc Plateau and Surprise Valley (Modoc County), Sierra Valley (Plumas & Sierra counties), Johnsondale (Tulare County), the Cascade Mountain foothills (Shasta County), the foothills above the Santa.Clara Valley (Santa Clara County) and in the previously mentioned Mono Basin of Mono County. A recrudescence of enzootic plague activity in many of these regions may prove to be an early warning of epizootic plague this spring and summer when rodent populations re-emerge.

Table 1. Plague possible mammals, California, 1998.

COUNTY	HOST	DATE	LOCATION	SPECIMEN RESULTS	
El Dorado	Coyote	7/24	Meyers, Cielo Ranch	Nobuto	1:512
El Dorado	Coyote	6)24	So. Lake Tahoe	Nobuto	1:64
B Dorado	Coyote	9/24	So. Lake Tahoe, Barton's Meadow	Nobuto	1:128
El Dorado	Coyote	9/24	So. Lake Tahoe, Barton's Meadow	Nobuto	1:256
El Dorado	Black Bear	9/13	So. Lake Tahoe. Fallen Leaf Lake	Nobuto	1:128
El Dorado	Coyote	6/24	So. Lake Tahoe, Hwy 50, airport	Nobuto	1:1024
El Dorado	Coyote	6/24	So. Lake Tahoe, Pioneer Trail	Nobuto	1:256
Kern	Coyote	5/13	Bakersfield, SSE	Nobuto	1:1024
Kern	Black Bear	8i28	Bcdfish,2S	Nobuto	1:256
Kern	Coyote	4/25	Frazier Park	Nobuto	1:128
Kern	Coyote	8/IS	Frazier Park	Nobuto	1:4096
Kern	Coyote	8)20	Frazier Park	Nobuto	1:256
Kern	Coyote	9/13	Frazier Park	Nobuto	1:256
Kern	Coyote	9/19	Frazier Park	Nobuto	1:126
Kern	Coyote	9/24	Frazier Park	Nobuto	1:2048
Kern	Raccoon	7/23	Frazier Park, SW. Cuddy Valley	Nobuto	1:1024
Kern	Raccoon	7/23	Frazier Park. SW, Cuddy Valley	Nobuto	1:256
Kern	Coyote	5/18	Keene	Nobuto	1:1024
Kern	Coyote	5/25	Keene	Nobuto	1:128
Yam	Coyote	5/27	Keene	Nobuto	1:512
Kern	Coyote	5/29	Keene	Nobuto	1:1024
Kern	Black Bear	8/17	Lake of the Woods. 1W, Cuddy Valley	Nobuto	1:128
Ks-n	Coyote	8/17	Lake of the Woods, 1W. Cuddy Valley	Nobuto	1:32
Kern	Coyote	2120	Lebec, 2E	Nobuto	1:64
Lassen	Coyote	7124	Madeline, 15E	Nobuto	1:2048
Mono	Coyote	7/25	Lee Vining. 35, Cain Ranch	Nobuto	1:32
Mono	CA G Squirrel	8/19	Lee Vining, 35, Horseshoe Meadows	Nobuto	1:126
Mono	CA G Squirrel	8/19	Lee Vining, 35. Horseshoe Meadows	Nobuto	1:128
Mono	CA G Squirrel	8/19	Lee Vining, 35, Horseshoe Meadows	Nobuto	1:128
Mono	CA G Squirrel	8/19	Lee Vining, 35, Horseshoe Meadows	Nobuto	1:128
Mono	CA G Squirrel	8/19	Lee Vining, 35, Horseshoe Meadows	Nobuto	1:256
Mono	CA G Squirrel	8/19	Lee Vining. 3S, Horseshoe Meadows	Nobuto	1:256
Mono	CA G Squirrel	8/12	Lee Vining, 3S, Horseshoe Meadows	Nobuto	1:256
Mono	Coyote	7/25	Lee Vining, 35, Bloody Canyon	Nobuto	1:256
Mono	Coyote	7/24	Lee Vining, 35, Cain Ranch	Nobuto	1:256
Mono	Coyote	7/15	Lee Vining, Walker Lake Road	Nobuto	1:125
Mono	Chipmunk, LP	8/20	Toiyabe NF, Ounderberg Meadow Rd.	Nobuto	1:1024
Mono	Chipmunk. LP	8/20	Toiyabe NF, Trumble Lake CC	Nobuto	1:256
Modoc	Coyote	11/10	Alturas, 125, Beason Ranch	Nobuto	1:64
Modoc	Coyote	6/25	Alturas, 3E, D. J. Ranch	Nobuto	1:1024
Mariposa	Black Bear	8/21	*YNP*, Yosemite Valley	Nobuta	1:64
Modesto	Coyote	7/13	Alturas, SN, Modoc Estates	Nobuto	1:2048
Modoc	Coyote	7/28	Alturas, 7E, Wilson Ranch	Nobuto	1.1024
Modoc	Coyote	4/7	Pjtjras, BE. 0. J. Ranch	Nobuto	1:64
Modoc	Coyote	8/4	Cedar Mill *lEN*, DePaul Ranch	Nobuto	1:54
Modoc	Coyote	6/30	Eagleville	Nobuto	1:2048
Modoc	Coyote	6/29	Eagleville, 17E, Bare Ranch	Nobuto	1:512
Modoc	Coyote	4/16	Eagleville, 25SE, Tuledad Canyon	Nobuto	1:32
COUNTY	**HOST**	**DATE**	**LOCATION**	**SPECIMEN RESULTS**	

Modoc	Coyote	9/1	Lake City. SN	Nobuto	1:256
Modoc	Mountain Lion	8/25	Likely, 20E, Bear Camp	Nobuto	1:128
Modoc	Coyote	3/24	Likely, 4E, Hamel Ranch	Nobuto	1:64
Modoc	Coyote	7/8	Likely. 4W	Nobuto	1:4096
Plumas	Coyote	6/22	Beckwourth, BMW, Clover Valley	Nobuto	1:128
Plumas	Coyote	6/22	Beckwourth, 8MW, Clover Valley	Nobuto	1:256
Plumas	Coyote	5/15	Beckwourth, 8W, Clover Valley	Nobuto	1:128
Plumas	Coyote	5/12	Beckwourth, 9NW, Clover Valley	Nobuto	1:1024
Riverside	CA G Squirrel	6/30	COP, Hurley Creek	Sera	1:32
Riverside	CA G Squirrel	6/23	COP, Idyllwild	Sera	1:256
Riverside	CA G Squirrel	6/16	Mt. San Jacinto SP, Stone Creek CC	Nobuto	1:1024
Riverside	CA G Squirrel	6/16	Mt. San Jacinto SP, Stone Creek CC	Nobuto	1:512
Riverside	CA G Squirrel	6/10	San Bernardino NF, Boulder Basin CS	Sera	1:255
Riverside	CA G Squirrel	6/17	San Bernardino NW, Boulder Basin CC	Sera	1:32
San Bernardino	CA G Squirrel	8/17	San Bernardino NW, East Flat	Sera	1:126
San Bernardino	CAG Squirrel	8/17	San Bernardino NF, East Flat	Sera	1:64
San Bernardino	CA C Squirrel	8/4	San Bernardino NF, Heart Bar CG	Sera	1:1024
San Bernardino	CA G Squirrel	8/4	San Bernardino NF, Heart Bar CC	Sera	1:32
San Bernardino	GM C Squirrel	1/4	San Bernardino NF, Heart Bar CC	Sera	1:16
San Bernardino	CA C Squirrel	9/15	San Bernardino NE, Serrano CC	Sera	1:128
San Diego	CAG Squirrel	4/16	COP, William Heise	Sera	1:512
San Diego	CA G Squirrel	4/16	COP, William Heise	Sera	1:512
San Diego	CA G Squirrel	6/2	Palomar Mt SP, Doane Valley CC	Sera	1:128
San Diego	CA G Squirrel	6/22	Palomar Mt. SP, Doane Valley CC	Sera	1:16
San Diego	CA G Squirrel	7/7	Palomar Mt SP, Doane Valley CG	Sera	1:32
Sari Diego	CA G Squirrel	7/23	Palomar Mt. SF, Doane Valley CC	Nobuto	1:256
Shasta	Bobcat	7/9	Anderson, 13E, Wildcat Rd., Manton	Nobuto	1:512
Shasta	Domestic cat	5/5	Bumey, 22092 Widgeon Court	Sera	1:512
Shasta	Domestic cat	5/27	Burney, 22092 Widgeon Court	Sera	1:512
Sierra	Raccoon	4/7	Loyalton	Nobuto	1:512
Sierra	Bobcat	5/11	Loyalton, SN	Nobuto	1:1024
Tulare	Mountain Lion	5/25	Johnsondale	Nobuto	1:64
Tuolumne	Black Bear	8/16	Tuolumne Meadows	Nobuto	1:256
Tuolumne	Black Bear	7/29	YNP, 6W, Hwy 120, Hardin Flat	Nobuto	1:128
Ventura	Deer mouse	3/19	Los Padres NF, Chuchupafe CC	Sera	1:32
Ventura	Chipmunk, M	5/29	Los Padres NF, Chuchupate CC	Sera	1:256
Ventura	Chipmunk, M	6/17	Los Padres NF, Chuchupate CC	Sera	1:2048
Ventura	Chipmunk, M	6/18	Los Padres NF, Chuchupate CC	Sera	1:32

ABBREVIA11ONS:

Host	Ground squirrels: CA G Squirrel, California ground squirrel; GM G Squirrel Golden-mantis ground squirrel. Chipmunks: Chipmunks, LF, Lodgepole chipmunk Chipmunk M, Merriam's chipmunk: Chipmunk YP, Yellow-pine chipmunk.
Location:	NF, National Forest CG, Camp Ground; COP, County Park, SP, State Park
Plague Positives	P05, positive by bacteria culture; 1 fl, positive antibody titer by passive or indirect hemmagglutination test

APPENDIX I, PEST MANAGEMENT OPERATIONS

1. PURPOSE. To outline procedures for handling pesticides and to discuss the safety precautions associated with the pest management program.

2. GENERAL.

a. The pesticides used at the CAARNG camps/armories/facilities include insecticides, herbicides and rodenticides.

b. Handling concentrated pesticides during shipment, storage and preparation of dilute formulations and during application of dilute formulations is hazardous in that personal contamination can result in extreme illness, skin damage or death.

c. Pesticide applications shall be carried out by certified pest controllers.

d. All locations used for pesticide storage and mixing shall be marked to designate pesticide operations.

e. Only products approved for use as self-help pesticides will be used by Facility Managers, building occupants, and other non-certified personnel. See Appendix D for a listing of approved self-help pest control items.

3. PROCEDURES.

a. Training and Certification.

(1) The Pest Management Coordinator and personnel who evaluate the quality of work of pest control contracts must have training equal to the level of pest management being performed.

(2) Armory/Facility Managers act as the on-site quality assurance evaluators. These personnel are not required to be DoD certified. However, pest management training is recommended for these personnel as it will improve the effectiveness and ultimately reduce the cost of the program.

b. Pest Control Equipment. Pest control items authorized through self-help may be found at Armories and other facilities. Pest control equipment is also found in the pest control shop on Camp Roberts.

c. Protective Clothing and Equipment.

(1) Appropriate protective clothing and equipment will be worn by personnel applying pesticides in and around CAARNG facilities. Personnel involved with cleanup of pesticide spills will also be adequately protected. The following clothing and equipment should be considered whenever potential contact with pesticides is anticipated:

(a) Chemical resistant gloves, aprons and boots.

(b) Full face shield.

(c) Splash goggles.

(d) Respirators approved for use with the pesticide spilled.

(e) Work uniform or coveralls.

(2) Personnel applying self-help products should refer to the label requirements for personal protective equipment.

d. Pesticide Storage.

(1) All self-help pesticides stored at the camp/armory/facility shall be stored in covered areas where freezing and extreme heat are prevented. The storage areas shall be kept locked when not in use.

(2) All pesticides shall be segregated as to kind of pesticide during storage. Herbicides and other pesticides used by contractors should not be stored in CAARNG facilities. Labels on all containers shall be visible at all times. The pesticides shall be stored in their original containers. Pesticides must be stored in a manner that allows for the products acquired earliest being used/sold first (first in, first out).

(3) The local Fire Department shall be furnished with an inventory of the kinds and amounts of pesticides present at each storage or mixing location. This inventory shall be updated at least annually, at the end of each calendar year.

e. Pesticide Mixing.

(1) Only authorized, trained and certified personnel shall handle and mix pesticides.

(2) Personnel mixing pesticides will use a back flow preventer to prevent contamination of the facility’s water source.

(3) Contractors will not dispose of empty pesticide containers on government property.

(4) All pesticides shall be mixed and applied in accordance with the label directions. The certified pest controller shall determine what pesticide to use, what rate to use and how it should be mixed and applied.

f. Pesticide Application.

(1) Only authorized, trained and certified personnel shall apply pesticides. This excludes self-help pesticides that may be applied by non-certified personnel.

(2) Pesticide application shall be carried out in accordance with the label directions of the pesticide used and the manufacturer's operating instructions for the equipment used.

(3) Pesticide application operations shall be conducted as follows:

(a) Dry, granular pesticide application shall be conducted when the wind speed is less than 10 miles per hour to prevent drift. Although most granular pesticides will hit the target application site in wind speeds greater than 10 miles per hour, some of the more finely divided dust inherent with granular formulations may drift off-target. Check each pesticide label for any warnings concerning wind speed. An approved respirator shall be worn whenever required by the pesticide label. The operator shall wear a respirator when pesticide dust is a hazard.

(b) Outdoor liquid pesticide application shall be conducted when the wind speed is less than 5 miles per hour to prevent drift. Check each pesticide label for any warnings concerning wind speed. Approved respirators shall be worn whenever required by the pesticide label.

g. Sale and Distribution of Pesticides. Pest control items may be available for purchase at the military exchange. Although these products, including pesticides, may be purchased for individual use at home, Facility Managers may only use those items at their facilities that are identical to those on the approved self-help list.

h. Self-help Pest Control. Facility Managers are encouraged to use approved self-help products to minimize the need for contracted pest management. These products are considered by EPA as "General Use" and have been approved for use by Department of the Army. Purchase or use of pesticides not on the DA approved list must be requested in writing from the National Guard Bureau Pest Management Consultant. See Appendix D for more detailed information on self-help pest control. Self-help pest control items usually fall into the following categories:

(1) Mechanical traps and glue boards for insects and rodents.

(2) Baits for ants or cockroaches.

(3) Aerosol insecticides.

(4) Fly swatters.

(5) Repellents.

(6) Insecticide dusts for cockroach control.

i. Pesticide Spill Cleanup. Pesticide spill cleanup kits are located in all areas where self- help pesticides are stored. In addition, a spill cleanup kit will be carried on vehicles used by contracted pest controllers.

j. Pesticide Container Disposal. Pesticide containers, with the exception of self-help bait stations, boric acid, and aerosol insecticides will not be disposed of on any CAARNG facilities.

k. Reporting.

(1) Adequate records of all pest management operations performed by contractors will be maintained by the Facility Managers. In addition, the number and type of self-help pesticides used

will be kept on file.

(2) The contracted pest controllers will submit complete pesticide application and surveillance records using DD Form 1532-1 (Pest Management Maintenance Records) to the Facility Managers. These records will account for all operations and will provide a permanent historical record of pest control operations for each building, structure, or outdoor site.

(3) Specific reporting procedures for pesticide application are listed in Appendix C. Information on reporting requirements required by the DoD Measures of Merit can be found in Appendix N.

4. REFERENCES.

a. AR 200-5, Pest Management.

b. TM 5-632, Military Entomology Operational Handbook, most recent version available at AFPMB website; http://www.afpmb.org/mpmh/mpmh/pdf.

c. Pesticide Labels and Manufacturer's Literature.

d. Appendix C, Pest Management Records.

e. Appendix N, DoD Measures of Merit.

APPENDIX J, PEST MANAGEMENT CONTRACTING DOCUMENTS

INFORMATION SHEET

PESTICIDE APPLICATION IN CAARNG FACILITIES

The following information should be obtained from contractors applying pesticides in any CAARNG facilities. This information includes herbicides applied outdoors for weed control as well as indoor pesticide application for insect and rodent control. The Facility Managers should coordinate the request for this information with each contractor, as applicable. For an example of the material required by the CAARNG, please see the Camp Roberts Pesticide Usage Reporting Form. At a minimum, the data required are as follows:

- Product Name
- EPA Registration Number – found on the pesticide label.
- Name of active ingredient(s) and their percentages in the original container.
- Percent of final spray
- Amount of dilute pesticide applied.
- Number and type of bait stations placed (if used by the contactor)
- Number of man hours required
- State Certification Number of the applicator(s)
- Target pest(s)

SAMPLE PESTICIDE APPLICATION SHEET

- Product Name -- Pramitol 5PS
- EPA Registration Number – 100-479 (Sample label available at: (http://oaspub.epa.gov/pestlabl/ppls.getimage?imgid=244)
- Active Ingredient(s) -- Prometon 5%
  Simazine 0.76%
  Sodium Chlorate 39.8%
  Sodium Metaborate 50%
- Percent of final spray – As stated in the active ingredients. Applied at a rate of 400 lbs/Acre
- Amount of dilute pesticide applied – 100 gallons
- Number and type of bait stations applied – None
- Number of man hours required – 4
- State Certification Number – CA860508
- Target Pest – All vegetation

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APPENDIX K, PEST MANAGEMENT REFERENCES

The following is a list of federal and state laws, Army regulations, technical manuals, and other references that should be of value in the CAARNG Pest Management Program.

A. Federal Laws.

1. The Federal Insecticide, Fungicide and Rodenticide Act (through PL 100-460, 100-464 to 100-526, and 100-532).

2. Title 29, CFR, Current revision, Section 1910, Occupational Safety and Health Standards.

3. Federal Noxious Weed Act [7 U.S.C. 2801-2814]:

4. Food Quality Protection Act (FQPA), 1996, Section 303

5. Endangered Species Act, 1973

6. Food, Drug, and Cosmetic Act

7. Occupational Safety and Health Act, 29 U.S.C 651-678

8. Pollution Prevention Act of 1990, PL 101-508

B. Directives and Instructions

1. Department of Defense Instruction 4150.7, Department of Defense Pest Management Program, 22 April 1996.

2. EO 12856: Federal Compliance with Right-to-Know Laws and Pollution Prevention, 3 August 1993.

3. EO 11987 (Carter, 1980) Exotic Organisms: Control noxious species, prevent restrict introductions. (Revoked by EO 13112, Invasive Species)

4 EO 13112, Invasive Species (Amended by EO 13286, Amendment of Executive Orders, and Other Actions, in Connection With the Transfer of Certain Functions to the Secretary of Homeland Security)

5. EO 12088 Compliance with Pollution Control Standards

6. Presidential Memorandum, "Environmentally and Economically Beneficial Practices on Federal Landscaped Grounds", subject: using native plants in landscaping, 26 April 1994.

7. AFI 91-202, BASH Reduction Program, 11 June 2003.

C. Regulations.

1. AR 11-34, The Army Respiratory Protection Program, 15 February 1990.

2. AR 40-5, Preventive Medicine,15 October 1990.

3. AR 200-1, Environmental Protection and Enhancement, January 2002.

4. AR 200-2, Environmental Effects of Army Actions, 23 December 1988.

5. AR 200-3, Natural Resources Land, Forest, and Wildlife Management, 28 February 1995.

6. AR 385-32, Protective Clothing and Equipment, February 2000.

7. AR 200-5, Pest Management, October 1999.

8. NGR No. 385-10, Army National Guard Safety Program, 25 November 1983.

D. Technical Manuals.

1. TM 5-629, Weed Control and Plant Growth Regulation, 24 May 1989.

2. Military Pest Management Handbook, Chapters 1-10, with Appendices, available from the Armed Forces Pest Management Board website, http://www.afpmb.org/mpmh/mpmh.pdf

E. Technical Guides from the U.S. Army Center for Health Promotion and Preventive Medicine.

1. No. 116, Guide for Fish Kill Investigations, May 1980.

2. No. 138, Guide to Commensal Rodent Control, December 1991.

3. No. 142, Managing Health Hazards Associated with Bird and Bat Excrement, December 1992.

4. No. 196, Guide to Poisonous and Toxic Plants, July 1994.

5. No. 208, Procedures for Thermal Control of Cockroaches in Army Food Service Facilities, January 1997.

F. Armed Forces Pest Management Board Technical Guides.

1. No. 13, Ultra Low Volume Dispersal of Insecticides by Ground Equipment, December 1999.

2. No. 14, Protective Equipment of Pest Control Personnel, March 1992.

3. No. 15, Pesticide Spill Prevention Management, June 1992.

4. No. 16, Pesticide Fires: Prevention, Control, and Cleanup, June 1981.

5. No. 17, Military Handbook, Design of Pest Management Facilities, 1 November 1991.
6. No. 18, Installation Pest Management Program Guide, March 11 2003.

7. No. 20, Pest Management Operations in Medical Treatment Facilities, September 2002.
8. No. 21, Pesticide Disposal Guide for Pest Control Shops, July 2002.

9. No. 22, Guidelines for Testing Experimental Pesticides on DOD Property, June 2001.

10. No. 24, Contingency Pest Management Pocket Guide, April 15 2002.

11. No. 26, Tick-Borne Diseases, Vector Surveillance and Control, June 1998.

12. No. 27, Stored-Product Pest Monitoring Methods, September 2000.

13. No. 29, Integrated Pest Management In and Around Buildings, July 2003.

14. No. 30, Filth Flies: Significance, Surveillance and Control in Contingency Operations

15. No. 31, Contingency Retrograde Washdowns: Cleaning and Inspection Procedures, December 1993.

16. No. 34, Bee Resource Manual, with emphasis on The Africanized Honey Bee, August 2002.

17. No. 36, Personal Protective Techniques Against Insects and Other Arthropods of Military Significance, April 2002.

18. No. 37, Guidelines for Reducing Feral/Stray Cat Populations on Military Installations in the United States, January 1996.

19. No. 39, Guidelines for Preparing DoD Pest Control Contracts Using Integrated Pest Management

20. No. 40, Methods for Trapping and Sampling Small Mammals for Virologic Testing

21. No. 41, Protection from Rodent-borne Diseases with special emphasis on occupational exposure to hantavirus

22. No. 42, Self-Help Pest Management

23. No. 43, Guide to Pest Surveillance During Contingency Operations

G. Other References, Manuals, Books and Guides.

1. MIL-STD-904B, Guidelines for Detection, Evaluation and Prevention of Pest Infestation of Subsistence, 10 March 2000. (Note! This link takes you to the Defense Standardization Project homepage. Click on "Online Specs." Then go to the "Assist Quick Search" and search for Document ID MIL-STD-904B.)

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2. TB Med 561, Occupational and Environmental Health, Pest Surveillance, June 1992.

3. *Mallis Handbook of Pest Control*, 7th Edition, PCT Books, 4012 Bridge Ave, Cleveland, OH 44113, 1100 pp., $89.00

H. Periodicals.

1. *Pest Control* (Magazine Published Monthly, $22/year), P.O. Box 6215, Duluth, MN 55806-9915.

2. *Pest Control Technology* (Magazine Published Monthly, $30/year), PCT, 4012 Bridge Ave, Cleveland, OH 44113.

3. Pest Management Bulletin, Periodic Publication of U.S. Army Center for Health Promotion and Preventive Medicine, Entomological Sciences Program, Aberdeen Proving Ground, MD 21010-5403 [Phone DSN 584-3613 or Commercial (410) 436-3613].
This is available on the U.S. Army Center for Health Promotion and Preventive Medicine's homepage at http://chppm-www.apgea.army.mil/ento

APPENDIX L, NATIONAL GUARD BUREAU PEST MANAGEMENT ENVIRONMENTAL ASSESSMENT

The attached file, *NGB FNSI 9-04.pdf* is the Final Programmatic Environmental Assessment for the ARNG Pest Management Program. This document presents a Finding of No Significant Impact for the Army National Guard Pest Management Program.

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APPENDIX M, GUIDANCE ON DOD MEASURES OF MERIT

In 1996, the US Environmental Protection Agency and the Department of Defense agreed in a Memorandum of Understanding to reduce human exposure to pesticides and to reduce environmental impacts caused by pesticide usage. The original goals, established in December 1996 as Measures of Merit (MOMs), include:

- Have current pest management plans at 100% of installations by the end of Fiscal Year 1997;
- Reduce the amount of pesticide active ingredient applied at installations by 50% by Fiscal Year 2000; and
- Have 100% pesticide applicators certified by the end of Fiscal Year 1998.

These MoMs were updated in July 2004. MoMs #1 and #3 remain the same but with a new end date of 2010. MoMs #2 is to maintain the achieved reduction rather than strive for a continued reduction. The new MoMs #2 states: "Through the end of FY 2010, DoD will maintain the achieved reduction in annual pesticide use on DoD installations. This reduction goal is set at an average of the FY 2002 and 2003 usage…"